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ORIGINAL COMMUNICATIONS.

THE HUXLEY LECTURE ON RECENT ADVANCES IN SCIENCE AND THEIR BEARING ON MEDICINE AND SURGERY.*

BY PROF. DR. RUDOLF VIRCHOW,
University of Berlin.

Delivered at the opening of the Charing Cross Hospital Medical School on October 3d.

The honor of being invited to deliver the second Huxley Lecture has deeply moved me. How beautiful are these days of remembrance which have become a national custom of the English people, and through which the memory of intellectual heroes is kept alive to posterity! How touching is this act of gratitude when the celebration is held at the very place wherein the genius of the man whom it commemorates was first guided towards its scientific development! We are filled not alone with admiration for the hero, but at the same time with grateful recognition of the institution which planted the seed of high achievement in the soul of the youthful student.

That you, gentlemen, should have entrusted to a stranger the task of giving these feelings expression seemed to me an act of such kindly sentiment implying such a perfect confidence that I at first hesitated to accept it. How am I to find in a strange tongue words which shall perfectly express my feelings? How shall I, in the presence of a circle of men who are personally unknown to me but of whom many knew him who has passed away and had seen him at work, always find the right expression for that which I wish to say as well as a member of that circle itself could? I dare not believe that I shall throughout succeed in this. But if, in spite of all, I repress my scruples, it is because I know how indulgently my English colleagues will judge my often incomplete statements, and how fully they are inclined to pardon deficiency in diction, if they are convinced of the good intentions of the lecturer. I may assume that such a task would not have been allotted to me had not those who imposed it known how deeply the feeling of admiration for Huxley is rooted within me, had they not seen how fully I recognized the achievements of the dead master from his first epoch-making publications, and how greatly I prized the personal friendship which he extended towards me. In truth, the lessons that I received from him in his laboratory—a very modest one according to present conditions—and the introduction to his work which I owe to him, form one of the pleasantest and most lasting recollections of my visit to Kensington.

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*From the American Medico-Surgical Bulletin.

The most competent witness of Huxley's earliest period of development, Professor Foster, presented in the first of these lectures a picture of the rapidly increasing extension of the biological knowledge, which must have excited not only our admiration but also the emulation of all who study medicine. Upon me the duty is incumbent of incorporating with this presentment the newer strides of knowledge and of stating their influence upon the art of healing. So great a task is this that it would be presumptuous even to dare to attempt its accomplishment in a single lecture. I have decided, therefore, that I must confine myself to merely sketching the influence of biological discoveries upon medicine. In this way also will the example of Huxley be most intelligible to us.

Huxley himself, though trained in the practical school of Charing Cross Hospital, won his special title to fame in the domain of biology. As a matter of fact, at that time even the name of biology had not come into general use. It was only recently, as I showed in my lecture, "On the Position of Pathology amongst Biological Studies,"* that the idea of life itself obtained its full significance. Even in the late middle ages it had not sufficient strength to struggle through the veil of dogmatism into the light. I am glad to be able to-day, for the second time, to credit the English nation with the service of having made the first attempts to define the nature and character of life. It was, as I then pointed out, Francis Glisson, who, following expressly in the footsteps of Paracelsus, investigated the principium vitæ. If he could not elucidate the nature of life he at least recognized its main characteristic. This is what he was the first to describe as "irritability," the property on which the energy of living matter depends. He thus succeeded in setting aside the mystical idea of the spiritualistic Archæus which Paracelsus and his followers had placed in the forefront of their deliberations, and in locating the principium energeticum in matter itself.

How great was the step from Paracelsus to Glisson and—we may continue—from Glisson to Hunter! According to Paracelsus, life was the work of a special spiritus which set material substance in action, like a machine; for Glisson matter itself was the principium energeticum. Unfortunately he did not confine this dictum to living substances only, but applied it to substance in general, to all matter. It was Hunter who first announced the specific nature of living matter as contrasted with non-living. But he also did not attain perfect clearness of vision, because in the development of English medicine the idea had been allowed to take root and grow that life was not bound up with structure, so that Hunter also was led to place a materia vitæ diffusa at the head of his physiological and pathological views. Hence he arrived at the assumption of the so-called plastic substances in respect of which the blood served both as rallying-point and seat of formation, and so it happened that in place of the old Greek humoral pathology which Paracelsus had overthrown, a new humoral pathology arose—hematology. According to the teaching of Hewson and Hunter, the blood supplied the plastic materials of physiology as well as the plastic exudates of pathology.

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* Croonian Lecture, *Proc. Roy. Soc.* Vol. LIII

Such was the basis of the new biological method, if one can apply such an expression to a still incomplete doctrine, in 1842 when Huxley was beginning his medical studies at Charing Cross Hospital. Of pathology in England, John Hunter was the accepted master, and so remained for many years thereafter. So great was his influence that Continental medicine also recognized it. To this I can myself testify, as I was at this time at the end of my university studies. It would lead too far afield were I to recount in this place how it happened that I myself, like Huxley, was early weaned from the pernicious doctrines of humoral pathology; it must suffice to say that salvation lay in the same science which had already once before, in the sixteenth century, brought about deliverance from humoral pathology. It then came about that Vesalius threw over the authority of Galen and founded human anatomy upon direct observation, on necropsy. Since then anatomical studies have been much widened and improved. When Huxley himself left Charing Cross Hospital, in 1846, he had enjoyed a rich measure of instruction in anatomy and physiology. How great this was can be gathered from the interesting statistics which Professor Foster has collected with the aid of Huxley's distinguished fellow student, Sir Joseph Fayrer. Of the lectures which junior students attended, 140 in each of the three years of study were devoted to anatomy and physiology. Thus trained, Huxley took the post of naval surgeon, and by the time that he returned, four years later, had become a perfect zoologist and a keen-sighted ethnologist. How this was possible any one will readily understand who knows from his own experience how great the value of personal observation is for the development of independent and unprejudiced thought. For a young man who, besides collecting a rich treasure of positive knowledge, has practiced dissection and the exercise of a critical judgment, a long sea-voyage and a peaceful sojourn among entirely new surroundings, afford an invaluable opportunity for original work and deep reflection. Freed from the formalism of the schools, thrown upon the use of his own intellect, compelled to test each single object as regards properties and history, he soon forgets the dogmas of the prevailing system and becomes first a sceptic and then an investigator. This change, which did not fail to affect Huxley, and through which arose that Huxley whom we commemorate to-day, is no unknown occurrence to one who is acquainted with the history not only of knowledge but also of individual scholars. We need only point to John Hunter and Darwin as closely allied examples.

The path on which these men have achieved their triumphs is that which biology in general has trodden with ever-widening strides since the end of last century; it is the path of genetic investigation. We Germans point with pride to our countryman who opened up this road with full conviction of its importance, and who directed towards it the eyes of the world—our poet-prince, Goethe. What he accomplished in particular for plants others of our fellow countrymen achieved for animals. I recall Caspar Friedrich Wolf, Döllinger, Joh. Friedrich Meckel, Carl von Baer, and our whole embryological school. As Harvey, Haller, and Hunter had once done, so these men began also with the study of the "ovulum," but this very soon showed that the egg was itself organized, and that from it arose the whole series of organic developments. When Huxley, after his return, came to publish his fundamental observations, he found the history of the progressive transformations of the contents of the egg already verified, for it was by now known that the egg was a cell and that from it fresh cells, and from them organs, arose. The second of his three famous papers, that on the relationship between man and the animals next beneath him, limned in exemplary fashion the parallelism in the earliest development of all animal beings. But beyond this it stepped boldly across the border-line which tradition and dogma had drawn between man and beast. Huxley had no hesitation in filling the gap which Darwin had left in his argument, and in explaining "that in respect of substance and structure man and the lower animals are one."

Whatever opinion one may hold as to the origin of mankind, the conviction as to the fundamental correspondence of human organization with that of animals is at present universally accepted. All biological science, especially physiology and pathology, creates hence the impulse to corresponding studies, and in particular all that has to be based on experiment must in the first instance be investigated in animals, while all that requires morphological confirmation finds support in comparative anatomy, histology and embryology. The basis of our comprehension of the theory of medicine actually rests nowadays on minute microscopy, for the elaboration of which the animal tissues form an indispensable control-object. Suffice it to say that in scientific biology the division between man and beast becomes less and less defined, but only let it be remarked the division between the abstract man and the abstract animal. It is the same relation as meets us in the differentiation between plants and animals. How many definitions of this have been put forth in the course of time, and how one after the other has been wrecked! But if we place a given animal and a given plant side by side, we overcome the difficulties which we had only raised by our own definition.

The greatest difficulty in biology has arisen in this way—that mankind, following a natural tendency, has set the search after the unitary basis of life in the foreground of its consideration. As a matter of fact, what is more natural than the conclusion that life as a special phenomenon must also have a special basis, and that the material process of life must be derived from a common cause? During the last century an attempt was made to satisfy this claim by the assumption, with ever-increasing conviction, of a special force—vital force. Nowadays we can still perceive the logical errors which this assumption rendered possible. Time has, however, passed judgment upon it, and to-day no one continues to speak of vital force. And yet the necessity for a single basis of all vital manifestations remains. How is this to be satisfied? This is a question which is not alone of great theoretical interest, but which has become an indispensable foundation for practical work, and particularly for medical practice. But in order to reach this foundation it is first of all necessary to dispense with all the dogmas of the schools, and to seek to construct an objective picture of the nature of vital processes.

As regards material construction, man and the higher animals and plants are no unitary, simple beings; on the contrary, they are put together from many units. They are hence called organisms. If they possessed but one single power which set all their parts in action, it would be impossible to understand how the special kind of activity which each one of these organisms exercises in its individual way comes about. This specific activity is present in the organism not alone in its perfect or fully grown form, but also during its development and growth. How can a single power, whether we call it in the spiritualistic sense spirit, soul, spiritus rector, or, in the physical sense, vital force or electricity, build up such diverse organisms? Or if this power resided in a single organ—were it in brain, or spinal cord, or heart—how could those brainless and heartless creatures be explained which present so abnormal a condition that at the beginning of this century they were the proper battle-ground of the mystics?

There is here, in my opinion, only one solution possible. The life possessed by the higher organisms is not a single one. Their life and all their activities only become intelligible when we go back to the exact representation, based upon a kind of instinctive observation, of the life of their parts. Each constituent part of a living organism has its special life, its vita propria. No one of the older authors proclaimed this more distinctly than Paracelsus. But he at once undid this good idea again by attributing to each living part a particular spiritus, a special Archæus. The best of the succeeding biologists were also held by this notion as in a snare; instead of busying themselves in the observation of vita propria—that is, the action of the parts—they continued to devote themselves to research on the Archæus.

The advances in general science based upon personal observation, and particularly those in medicine, have completely turned the attention of true observers to the study of individual parts. As I pointed out at the Medical Congress at Rome,* it stands most clearly revealed in the history of pathology that the division of the body first into larger regions (head, breast, abdomen, etc.), then into organs, then into tissues, and finally into cells and cell-territories, was the first step which opened up to us the comprehension of disease. The study of regions was followed by that of organs, and this again by that of the tissues, and finally by the cellular theory. But what is true of pathology must hold also for physiology, and, as a matter of fact, physiology has passed through the same developmental phases. One gradually comes to understand that the life of the individual parts is perfectly clear if one looks away from the Archæi of the organs or the tissues, and keeps in view only the life and activities of the single cells. For the life of an organ is naught else than the sum of the lives of the single cells which are gathered together into it, and the life of the whole organism is not an individual but a collective function.

If such a collective being is analyzed, no matter whether it be the whole organism, or a single organ, or only one tissue which is presented in its vital activity, the first requisite for a correct interpretation is that one should discard the fabled unity, and should regard the single parts, the cells, as the factors of existence. Single cells can be separated out even in a complex organism, but we should with difficulty arrive at a satisfactory theory if we did not also meet with single free-living cells in Nature. These have provided the first basis for objective investigation. Unicellular plants and animals have, during this century, been continually more fully and better studied. Botanists and zoologists have become the teachers of physiologists and pathologists. The ova of animals and the corresponding germ-cells of plants have bridged the gap between isolated living cells and higher organisms. It was the recognition of this fact which first raised the famous theorem of Harvey to the high position which it merits.

In a medical school, where the teaching is almost entirely concerned with human beings, we might put this sentence at the head of the lesson: "The organism is not an individual but a social mechanism." An exact anatomical analysis of this mechanism always brings us at last to cells; they are the ultimate constituents of all tissues as they were their origins Hence we call them the living elements, and hence we regard them as the anatomical basis of all biological analysis, whether it has a physiological or a pathological object in view.

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* Morgagni and Anatomical Thought.

In relation to this, two propositions must be stated: (1) That every organism, like every organ and tissue, provided it is alive, contains cells; (2) that the cells are composed of organic chemical substances, which are not themselves alive, but the mechanical arrangement of which determines the direction and power of their activity.

The first proposition has of late slowly come to be realized. Schwann, who recognized the origin of tissues from cells, still clung to the opinion that in the further development of many tissues the cells were used up. Among these he reckoned that important group which has subsequently become known as the supporting tissues, because it insures form and stability to single organs, and to the whole organism. First among these stand the osseous and connective tissues, which also form so large a fraction in the quantitative constitution of higher organisms. The conception of the osseous and connective tissues as free from cells must now be given up. Where formerly only empty spaces or mere leaks (lacunæ, holes) were seen in the tissue, we now can demonstrate actual cells. We can even isolate them. Hence it is now desirable that the name "tissue," in the sense of living tissue, should be applied only to such parts as contain living cells. Outside the cells the tissue may contain a more or less rich share of organic (chemical) material, but this intercellular or extracellular substance must be regarded as an additional endowment, and not as a vital factor. Such parts as arose originally from living cells, but of which the cells have perished, must be excluded from biological consideration. As examples may be adduced the epidermis and the hair belonging to it, together with the enamel of the teeth. These consist in reality of dead tissue.

As regards the second proposition that no living organic chemical substance exists, the fact has been objected that all living matter is put together from organic chemical materials; but whoever raises this point must have well-nigh overlooked the fact that these two kinds of substances, the living and the non-living, cannot be identified with one another. In spite of chemical similarity, or even correspondence, they exhibit recognizable differences, not alone physiological, but also mechanical and physical. Thus since the application of dyes has secured us a glimpse of the variety of the finer mechanical, or if one may say it molecular, arrangements of matter, it has become possible to differentiate living and non-living parts de visu. We are admittedly only on the threshold of these investigations, but the latest researches upon ganglion-cells have shown that, even beyond the effects of staining, differences between living and no longer living parts may become optically recognizable.

The enthusiasm with which for centuries the doctrine of formative principles and nutritive materials was built up has already become much abated, and has, in part, been entirely abandoned, through the knowledge that no single chemical substance, no kind of nutritive or formative material which can be employed as such, and without further change, for the origination or formation of cells, has ever been found outside the living organism. And yet a chemist of Liebig's importance actually believed that fibrin could be conveyed directly from the meat consumed into the juices of the body, and thence deposited in the tissues. This was a misconception—a relic from the time of the old humoral pathology—which regarded the living body and its constituent parts as arising simply from the coming together of a few ground-substances (humores cardinales). Hence arose the doctrine of plastic materials which were preexistent in the food and blood. With an obstinacy which was only surpassed by their superficiality, these theorists remained convinced that the plastic materials as such effected the construction and maintenance of living matter. They failed to see that the nutriment taken in had first to be prepared by special juices secreted by the cells of the digestive organs, and that both the digestive material and the plastic substance of the blood were rendered assimilable only by means of a new change, which had to be effected by the agency of the tissue-cells.

The doctrine of plastic material appeared to have gained new strength through Schwann's cell-theory. One must be careful not to misunderstand this designation. Since the cellular theory of animal and plant life has been established, many have maintained that Schwann's cell-theory is identical with it. Not only is this not the case, but the two stand in exact opposition to one another. Schwann assumed, and believed himself to have directly observed the process, that cells arose in undifferentiated matter, in a fluid or a semi-solid mass, in the following way: First, small particles of a firmer kind were separated off, then these came together into little heaps or clumps, by the internal transformation of which a cell-nucleus gradually arose. Round this a new precipitate of firmer substance now slowly accumulated, and from this arose the body of a cell. Hence the original amorphous substance would be the special constructive material, while the nucleus was the true cell-builder; Schwann called the former cytoblastem, the latter cytoblast.

It is obvious that from these premises people must have been logically led to the conclusion that every form of organic tissue or organism, every kind of new cell must be separated from the preceding by a definite gap (hiatus), so that each new formation must be grouped as a discontinuous vital origin. Strangely enough, this classification arose and was accepted at a time when Darwin was already at work proving that new species arise by the modification of pre-existing forms. But Schwann's cell-theory was in truth a resuscitation of the archaic doctrine of spontaneous generation (generatio æquivoca, epigenesis). With the rule of such a creed Darwinism was incompatible.

The supports of this generatio æquivoca have been, as far as zoology is concerned, gradually demolished. The formation of tissue-cells from the egg and its partition has been observed throughout the whole animal kingdom. Apparently eggless animals, such as the cestoids and trichinæ, have one after the other been brought under Harvey's law; we know their eggs, their embryos, and their wanderings. There remains, in fine, but one great domain, though this is of the highest importance: it belongs particularly to pathology, and is that of the plastic exudates, which accompany the most important clinical processes, particularly the inflammatory.

It will readily be understood that so essentially pathological a subject would have but little interest for pure natural philosophers. They left it to medical men, who have to occupy themselves with it all day long. But in medicine this territory was held sacred; no one doubted that therein spoke old, well-attested experience. We old students were endowed with the so-called theorem of the plastic exudates from our earliest studies. Translated into our latter-day parlance, such a theorem would recognize discontinuity in most pathological new formations; it would establish—and this is well worthy of note—the grounds for the dogma of the origin of life from non-living matter. Experience has taught us the exact opposite.

Permit me here, gentlemen, to speak a little more personally than is elsewhere my intention. Perhaps it will be more intelligible to the students of this hospital, and will make more impression if I narrate how I myself arrived at quite other views.

It was towards the end of my academical studies, more than fifty years ago, that I had to take up the work of assistant in the ophthalmic clinic of the Charité Hospital at Berlin. My attention was at once directed to the diseases of the cornea. We had severe cases of keratitis, but I saw in them no exudation; numerous cataract operations were performed and the wounds closed, but not by plastic exudation; this was absent from all corneal scars. Could this be explained by the circumstance that the cornea, apart from its circumference, is a non-vascular tissue? My interest was at once focussed on the non-vascular tissues. I turned first to the articular cartilages, and behold, here also I found the greatest changes without the presence of exudation, or, at any rate, of plastic exudation. I need only recall the form of inflammation which I named arthritis chronica deformans, and which is described by French physicians as arthrite sèche. My experimental studies on the inflammation of the walls of blood-vessels showed that the equally non-vascular intima of the larger arteries, and in part also that of the veins, can undergo great changes without even a trace of exudation being produced. Later on anatomical investigations on endocarditis led to the same result, provided that parietal thrombi were not regarded as exudations. But in all these cases and in every place there were found changes in the tissue-cells, active such as swelling, multiplication of nuclei, etc., or passive, as fatty degeneration.

I next turned my attention to vascular organs, and in particular to those which were recognized by pathology as the common seats of exudation-processes. I refer, first, to the medullary infiltration of the lymphatic (follicular) tissue of the intestine and mesenteric glands in typhoid fever so strikingly depicted by the Vienna school: instead of the amorphous albuminous exudate which was described, I found only cells, and cells of the same kind as those which are normally present in these situations. The same was revealed in the so-called caseous exudates which were at one time ascribed to scrofula, at another to tuberculosis; the cheesy material was admittedly in the main amorphous, but it was in reality not an exudation at all, above all, not a primary product of disease, but rather the secondary product of degenerative necrobiotic changes in parts of the tissues, which had formerly been organized and not infrequently actually hyperplastic.

It is not necessary to go further into details in order to show how great is the realm of this pseudo-exudative process. But I cannot help referring to another series of morbid processes affecting the bones. It was whilst studying rickets that I first learnt the biological significance of the cartilage-corpuscles, the nature of which had till then been interpreted in very different ways. I believe that I was the first to distinguish in these corpuscles what must be actually recognized as cells from the merely capsular and extracellular coverings. The rachitic disturbance now brought into fullest evidence an appearance which was repeatedly misunderstood even by later observers; this was the increase of these cells by division, and the consequent growth of the cartilage.

It was not difficult to follow out the direct transition of the epiphysial cartilage into the periosteum of the neighboring bone, and thus into connective tissue. At this time the whole world was convinced of the correctness of the statement made by Duhamel that increase in thickness in the long bones was affected by the periosteal vessels exudating a nutritious juice, out of which the new bone substance was formed. Pathologists had extended this formula to periostitis and the formation of exostoses and hyperostoses; they assumed that between the periosteum and the bone a plastic exudation was excreted and stored up, in which the new osteophyte arose by secondary organization. The consequence of my investigations was that in not one of these spots, neither in the cartilage nor in the periosteum, neither in normal growth nor in rickets or periostitis, was organization preceded by the presence of a recognizable amorphous exudation. On the contrary, it was indubitably shown that the first stage of the changes was an active productive process of cell-multiplication; that at the same time the intercellular substance altered in character and underwent a series of successive changes till it assumed an osteoid appearance; and that then, and not till then, followed calcification and true ossification. There was also no difficulty in adducing the proof that the separate stages of these processes in cartilage and in periosteum ran a perfectly parallel course, although the new tissue was in the one case at first true cartilage, in the other only cartilage-like. If one wishes to designate this process in general it must be called proliferation. Most of these processes are of the nature of proliferation. Whoever calls the proliferative layer an exudation will never obtain an objective view of the actual proceeding.

There is thus not the slightest necessity for the genuine observer to hold to the arbitrary and totally erroneous formula of a plastic exudation. There is no such thing as a plastic exudation which is ever simply amorphous; the cells which may be found in it have not arisen there. With this proof, which can be obtained in numberless other places, the doctrine of the discontinuous origin of pathological new formations is set aside. Every such new formation presupposes a tissue from which its cells arise; this is its matrix. There is no difference in principle between the descent of men and animals from one mother and the descent of pathological new formations from one matrix. Pathology has been somewhat late in arriving at the knowledge of this correspondence, but I think that it has acquired especial value for biology in general.

In order to avoid misunderstanding, it may be noted that not every living cell is capable of becoming a matrix. All cells which are destined for the highest animal functions prove sterile, or at least very hypothetically capable of proliferation. Ganglion-cells, primitive muscle-bundles, red blood-corpuscles do not come under consideration as regards the theory of pathological descent. The more indifferent cells, on the other hand, above all those of cartilage, connective tissue and epithelium exhibit a marked proclivity to bring forth new cells. Many cells again, such as bone-corpuscles and fat-cells, require a special preparatory metaplastic stage before they can produce a new brood.

Proliferation is an active property of special cells. That it cannot be performed by all cells alike in no way alters the fact that it can only be performed by cells. It is just as little a function of an entire organism, for this itself would then have to be unicellular. In this property lies the explanation of the origin of a whole organism from a single egg-cell, that wonderful process which comes to pass but once in the life of an animal. Once tissues have arisen, each cell of a matricial tissue may, in respect of proliferation, be compared to an ovum; it brings forth a new progeny from which new tissue grows. This tissue bears, as a rule, the stamp of its matrix—it is built on the maternal type. This is the nature of descent, and herein lies the key to the knowledge of heredity, that puzzling appearance with which mankind has ever busied itself.

According to the humoral theory heredity was derived from the body-fluids and in particular from the blood. According to this idea the blood furnished the means of the continuance of the family and the race; blood-relationship explained the similarity not only of the juices but also of the organs and the whole body. The blood according to its nature determined the goodness or badness of the organization; noble blood generated noble men and healthy organs, bad blood a debased posterity and organs predisposed to disease. In scientific works naught remains of these fantastic surmises; they persist like a superstition in lay circles, but no one now maintains their correctness in serious debate. In their stead has arisen the recognition of the particular value of the mother tissue and its cells. These are the factors of inherited properties, the sources of the germs of new tissues and the motor power of vital activity.

During the development of a higher organism the constitution of the individual tissues changes; they become differentiated by means of metaplastic processes which are in their turn connected with cells and cell-territories. Thus it comes about that people have for ages spoken of dissimilar parts. The complete full-grown organism is built up of similar and dissimilar tissues; their harmonious working gives the impression of a unity of the whole organism which is, as a matter of fact, non-existent. For the further the organism develops the more its social constitution comes into evidence. It consists of innumerable independent parts which together constitute a single social body. If we take the ultimate elements of these parts we must call them all without exception cells, for cells alone are truly alive and scientific judgment is in the last instance concerned with them.

So little is the whole organism a definite unit that the number of its living constituents is in the highest degree inconstant. Looking at the gross structure of organs we are accustomed to regard a certain number of them as typical peculiarities of human beings or the various genera and species of animals. We expect to find two of each paired organ and one of each unpaired in a single individual. Man, like all other mammals, has a fixed number of bones and teeth and these numbers are rightly used as diagnostic of man or of the particular variety or species of animal. But these numbers form no essential condition of existence; a man with six fingers or seven toes remains a man, just as a lung with supernumerary lobes or a kidney with an excess of coni medullares remains a lung or a kidney. A woman with three, four or even more mammary glands is thereby no more a lower animal than a man with a tail would be. These are theromorphs ("sports") which can have no influence on our opinion as to the sex of the affected individual or its position in the animal scale.

But it will be a long time before general opinion on the significance of "sports" will, even among experts, become unanimous. One sect will connect them with descent, and see in them a proof of atavism; while the other will regard them only as a pathological formation, and will trace this back to an acquired lesion. During the last century we have gone through violent disputes as to whether certain malformations were inherited or acquired. Those who pinned their faith to inheritance had very generally the arrière pensèe that the variation was atavistic, and the question soon presented itself as to whether the atavism was derived only from human ancestors, or whether one would have to go back as far as the lower animals to account for it. A universally valid explanation of theromorphism has not yet been found. In my opinion it will never be found. Each single example must be separately studied and explained, and the general value of this explanation will be by no means increased if we find atavism in any single case. Doubtless an acquired variation can also be transmitted, and the circumstance that it is animal-like (theroid) does not go to prove a not acquired but atavistically transmitted condition. In connection with this I may refer to my paper on Race-Formation and Inheritance.* I can here discuss only the principal ground for the disputes regarding hereditary diseases which are special to pathology.

Medical men are accustomed to describe as hereditary all diseases which reappear in different generations of the same family. Thus one speaks of hereditary arthritis, hereditary tuberculosis, hereditary cancer. It is in fact not difficult to produce genealogical tables which demonstrate the recurrence of a paternal or maternal disease in children or grandchildren. Much trouble has been devoted, in my opinion without result, to seeking the germs of such diseases in the ovum or the semen. One is hence compelled to pass on to generations of cells which took origin after conception. Here we reach what Roux has designated the post-generative formations. The further we pass away from the time of conception the more numerous examples do we find of alterations in the formation of cells and in the formation of embryonic tissues. But there is at the same time the greater possibility of the alteration having arisen after the formation of the first cells, and hence that the existing cause may have commenced to act at that time. If we set aside this possibility nothing else remains but to assume that from conception, or even from the organs which produced the ovum or the spermatozoon, a predisposition is transmitted which is already present in the earliest cells, even if it cannot be recognized in them.

Upon this theory are built up all interpretations of the inheritance of pathological and, we may add, physiological structures. There are, for example, many extraordinary anomalies in the disposition of hair, either through excess or through defect, and nothing is more common than to see the inherited transmission of such anomalies. But hairs are post-generative structures, and a disturbance in their development can make its first appearance only in a latter period of fetal life; not infrequently, indeed, it is first seen after birth. If such a peculiarity recurs through many generations in the branches of a family or a race it is called hereditary, and referred to a hereditary predisposition. But as undoubtedly excesses as well as defects in hairiness are brought about by acquired disturbances, such as actual diseases, it becomes necessary to seek a recognizable cause for such great anomalies as well. If such an one is found, the aid of a predisposition need not, as a rule, be invoked; one may be quite contented with the cause, which is then the causa efficiens.

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* Published in the "Bastian-Festchrift," Berlin, 1896, pp. 33-33.

Very recent medical history affords the most striking example of a rapid and comprehensive change in opinion regarding a disease formerly regarded as hereditary. Leprosy has for thousands of years passed as a contagious disease. But when about a generation ago the number of lepers in Norway increased to an astounding extent, and one family after another was seized with the malady, the question once more came up as to its hereditariness. Zealous investigators ransacked genealogical tables and church-registers, and families were discovered in which leprosy had persisted for decades, or even centuries. So universal was this conviction that the Government, with the consent of the clergy, wished to promulgate a marriage-forbidding decree; only a small majority in Parliament threw out the proposition. I was then requested by the government to travel through the leprous districts and to make a report; I succeeded in collecting a certain, though small, number of indubitable cases in which all suspicion of inheritance could be excluded. These were in particular persons who came as healthy adults from quite leprosy-free neighborhoods into the infected districts, and after a long sojourn there developed leprosy.

A few years later Armauer Hansen discovered the leprosy bacillus. Medical opinion changed in a moment. The venerable idea of the contagiousness of the disease was revived. Inheritance was denied and predisposition vanished from the treasure-house of dogmas. I will not assert that the grounds for embracing the present view are absolutely convincing, but I am positive that it is far to be preferred to the dogma of inheritance. And it is an experience instructive to all of us that one single fact, the discovery of a causa viva, should have sufficed to dash down the apparently best-grounded theory. The safely established recognition of a known cause has at once converted leprosy from an inherited into an acquired disease.

A similar thing happened a few decades earlier with two skin-diseases which were, according to the views of humoral pathology, traceable to a change in the blood, a dyscrasia, namely tinea (favus, porrigo) and the itch. The first actually bore the name of tinea hereditaria, or in German erbgrind. But the microscope revealed to Schönlein that favus arises from a mycelial fungus, and as regards scabies the popular Italian view was confirmed, namely, that a mite (Acarus sarcoptes) was its cause. So unstable are the most plausible theories in the light of an objective, practical knowledge.

Exactly the same experience has been met with in relation to certain diseases of the hair. When fungi were found on the hairs, no one cared any more about predisposition, although this possibly does occur. It is certain that there are parasitic forms of alopecia. But fungi cannot be found in every case of alopecia. Still less is this the case in anomalies of the hair associated with excessive growth. Here no other explanation is possible, except the assumption of a predisposition. This holds equally for hirsute races and for families of hairy men, as well as for those single hairy cutaneous patches (nevus pilosus) which are regarded as hereditary. The factors in the predisposition are the hair-roots, and moreover those which, although arising during fetal life, belong also to the post-generative group, since they are called later into increased activity.

The general cutaneous covering, in brief the "skin," although doubtless a kind of unitary structure of a generally similar type, is nevertheless in a double sense a socially constituent organ. Not only is it composed of numberless independent cells and cell-territories of dissimilar kinds; apart from the vessels and nerves of the connective tissue, the cutis proper, and the horny epithelial tissue, which forms also hairs and glands, the individual constituents of the skin have a special disposition and are exposed to various external and internal influences. This is best shown by the numerous morbid states to the definite scientific classification of which English dermatologists so early devoted themselves. The existence of maculæ, papules, pustules, and all the various other kinds of skin-spots, is demonstrated by the fact that in the skin a large number of little communities may be noted from the first as independent or hereditary factors of a particular predisposition. When mothers' marks (nevi), hairs, or even spines grow from them, it follows that in spite of their common origin there must exist a lasting difference between the various localities.

There is another highly remarkable question which every year claims the attention of medical men more and more; this is what was described in the old medicine as aberratio loci, in the new as heterotopia. It has long been known that hairs are present, not alone on the external skin, to which they properly belong, but also in internal organs where they are quite out of place; and further, that other cutaneous structures, such as epidermis, sebaceous glands and cutis appear in such places. We unite this whole group under the general term "dermoids." Modern histologists have long struggled against this theory of aberration, but they have finally had to quit the field, and the view has become dominant that, as a matter of fact, even in fetal life smaller or greater rudimentary fragments can be separated from their natural places of abode, and removed to other spots, where they, so to speak, find a new home, and can undergo all the further changes which are dependent on their cutaneous nature. It is thus that cysts and other tumors can arise from them.

The most remarkable examples of such heterotopias are afforded by certain glandular organs which, under normal conditions, present communities of similar parts arranged in special divisions. Among them a high place is taken by two organs which have recently demanded much attention, the thyroid and the suprarenal glands. On their surface may often be observed the pushing forward and progressive isolation of separate parts in the form of nodules or small lobes. But occasionally these nodules pass completely out of association with the main body of the gland, and are found disconnected in a perfectly strange place more or less removed from their seat of origin. The farthest journeys are those of the broken-off nodules of the supranels; their wanderings lead them to neighboring spots on the kidneys, or even into the interior of those organs, and in other cases over the kidneys into deeper parts of the peritoneum as far as the pelvis. And at all these places they may undergo further change, thus affording starting points for tumor-formation.

The same wandering has long been known in respect of teeth, and one knows that large tumors can arise from misplaced tooth-germs. The like holds with regard to cartilages, in which similar separations are noted in fetal life. The history of rickets has shown that islands of cartilage which were originally connected with the primary cartilages of the epiphyses or diaphyses come later in the course of bone-growth to lie in the interior of the bones, completely separated from their matrix. From them may arise other new formations such as enchondromata and osseous cysts. Extraordinary, even astonishing, as many of these cases are, they lose the character of perfect strangeness which they exhibit on superficial examination when we recall a frequent heterotopia which was produced at first rather by accident, then in surgical practice, and finally experimentally, and which is known by the name of transplantation. Since the grafting of pieces of the epidermis has come into use in rhinoplasty, and has been applied, often with great success, to the healing of refractory ulcers, it is no longer surprising to think that living pieces of tissue may continue to exist in unwonted situations, and can there undergo further development. Experimentally—and this has also become important in surgical practice—the first place under this head is taken by the transplantation of periosteum, which can be carried into every possible corner of the body, even through the circulation into the lungs, and which in all these places conserves its vitality and also its power of serving as a matrix for osseous tissue.

In my opinion, the bearing of these observations upon medical theory has been overrated, in that a property possessed by the transplanted tissue, to wit, the property of forming a tumor by proliferation, has been applied to the explanation of tumor-formation in general. This is a mistake. Transplanted issue has no fresh properties beyond those of the mother tissue from which it is separated.

That a sarcoma can arise from a nevus is only possible because the latter is a part of the skin, and because the skin itself can also produce sarcomata. A cartilaginous tumor can arise from an aberrant piece of cartilage in the middle of a bone, and give rise to an enchondroma, but it may also grow out as a simple cartilaginous hypertrophy (ecchondrosis) from permanent cartilage. A dermoid cyst can serve as the basis for the outgrowth of a cutaneous horn, but cutaneous horns and spines can also grow out of ordinary skin. In each of these cases there is only the realization of a possibility of formation which is present in the matrix in general. At the same time each of these cases illustrates the law of the vita propria of the tissues and of their activity linked to this life.

It is not without great scientific and practical interest to reflect that these observations illustrate another ancient doctrine, the doctrine of parasitism. This doctrine also is traceable back to Paracelsus, who wished to have disease in general regarded as a parasite. One century after another spread this theory abroad, or at least kept its memory green, although there is a fundamental error of logic in assuming the universality of parasitism. For if the living organism is constituted by separate and independent living parts, each of which nourishes itself, and of which most can propagate themselves and perform their special functions, each one of these individual parts must occupy the position of a parasite with respect to the others; it lives on and lessens the common stock of nourishment. The generally accepted view regarding parasitism postulates at the same time the harmfulness of this condition. In reality, every part is endowed with individual life so that it can act prejudicially on the remainder of the organism if its activity becomes excessive or defective. A nevus that becomes a sarcoma can assume a really hurtful significance. Hence it is requisite to remove the sarcoma, but it is not advisable to remove every nevus. Only an excess of caution can lead to an operation which finds its sole excuse in the possibility that nevus can conduce to the formation of a sarcoma. In like manner every excessive proliferation (luxuriation) can act harmfully; it may then be described as malignant. But many proliferations are useful, benign or even salutary, as, for instance, the scars which cover a loss of substance. It is just for the sake of a trustworthy prognosis that one must be extremely careful in the application of designations which group whole categories of morbid processes under a common aspect.

The idea of parasitism which we have here discussed in regard to the relation between different parts of the same organism, fits in much better where living organisms of a different variety or species enter into an organized corporation, and continue their special life in commensalism. The animal parasites, which exist as entozoa in man and other animals, have been longest known. Since the end of the last century our acquaintance with these entozoa has greatly broadened. Many structures which were formerly regarded as mere bladders (cysts) have been recognized as cestoid worms (entozoa cystica). The trichinæ, apparently sexless animals living in the interior of muscles, were first discovered in this century at Edinburgh; later experimental research succeeded in proving that after the consumption of infected meat these little worms rapidly became sexually ripe in the bowel, and produced not alone ova, but also living embryos and larvæ. Thus one comes to the worms which live in the blood, distomata and filariæ, and which later wander into the tissues. They all have a period during which they have their dwelling as organozoa in the midst of the living tissues of the organism, and become so perfectly incorporated that they carry on their own lives just like the proper cells. Quite new and pertaining exclusively to the investigations of our own time are the parasitic protozoa, beings of so rudimentary a kind that their position in the biological system is even yet not quite clear. Chief among these are the protozoa of malaria, quite microscopical organisms, many of which are such pigmies that they can penetrate into the smallest cells, such as the red blood-corpuscles. The darkness which for thousands of years had enveloped a group of most dangerous diseases—the tropical fevers—has been dispelled by the discovery of these tiny creatures. Important links in the history of these parasites are still wanting; we know nothing definite as to their origin or their career outside the great organisms which are their temporary dwelling-place, and nothing also as to their mode of action within these organisms, but we hold the threads by means of which perfect knowledge must be attained.

Lastly comes the equally new field of microscopic plants which appear sometimes as mere grains (cocci), at others as minute rods or chains (bacilli), and from which many of the most severe diseases, the élite of the parasitic infectious maladies, take origin. Their recognition began with the study of two very great and most widely spread processes, fermentation and putrefaction. It will ever remain the imperishable merit of Pasteur, not only to have firmly established the dependence of these processes on the activity of microbes, but to have elucidated the further life-history of the germs and their power of producing active chemical or physicochemical substances. Here for the first time were subjected to experiment parasitic beings which live and carry on their work outside the organism. Hence has been attained the wonderful result which has unlocked new methods both in medicine and in technical science. Above all, the results of microscopical research have been supported by trustworthy experiments, and their significance raised above all doubts; hence pathology in particular has won in directions which had hitherto been shunned by all who studied the nature of its processes, a clearness and certainty which has been reached in few other fields

The first great stride in the special domain of pathology was made in veterinary medicine. The discovery by Brauell of the anthrax bacillus opened the long series of new, and as we now call them, pathogenic, bacilli. It would lead too far afield to refer to all of these, or even to enumerate them; it must suffice to mention the two severest diseases, the dreadful effects of which are accounted for by the action of bacilli—tuberculosis and Asiatic cholera. In both cases it was Robert Koch who was fortunate enough, by means of careful, and in part very delicate, procedures, to demonstrate the constant presence of certain bacilli in the organs of patients. At the same time it became plain that, in spite of the presence of bacilli in both diseases, a totally different kind of infection could be recognized in the two; thus, while tubercle bacilli invade the organs, and therein exhibit their deadly action, the cholera bacillus remains almost exclusively in the intestine, and develops more after the manner of an infusorial plant.

For our discussion to-day it is inadvisable to go into minuter details. Only a few of the greater landmarks can be referred to. One of them I will mention but briefly, as I have written many long papers upon it: the necessity for distinguishing between the cause and the essential nature of infectious diseases. Parasitic beings, including, of course, bacteria, are never more than causes; the nature of the disease depends upon the behavior of the organs or tissues with which the bacteria or their metabolic products meet. From my point of view this distinction is of cardinal importance.

Both my other landmarks require somewhat fuller statement. The first is the general relation of the smaller parasites to the diseases determined by them. Under one name, which reaches back even into the old days of humoral pathology, and which I was the first to introduce into common parlance, are grouped all the processes which are produced by the invasion of morbid substances, under the general designation of infection. The Latin inficere means as one should say to "dirty." The polluting substance (res inficiens) has been called for ages dirt, impuritas. The products of putrefaction (materiæ putridæ) served as its prototype. In Greek they were called miasms (from *μιαίνω,* inficere), so that these latter names were applied chiefly to such uncleanness as had been produced outside the body. That which had arisen inside the human or animal body was called contagium. Both miasmatic and contagious substances produced by their penetration into the body severe attacks recalling poisoning. To distinguish such a substance from a true poison (venenum) it was designated a virus. The relationship between infection and intoxication was presumed, but it was not without good reason, considering the origin of the impurity, that the difference in designation was retained.

Among the innumerable infectious diseases it was the contagions which, owing to the associated danger to health and life, not for individuals only, but for numbers of men and animals, came most prominently to the front. Thus the remarkable property was observed in contagia that they multiplied in the body, and so besides infection as such produced an immeasurable quantity of fresh virulent substance. In this respect they approached living beings, and the thought arose that they themselves were alive (contagia viva). With the discovery of parasitic animals and plants this conjecture soon became a fact. Nothing was easier than to generalize this fact and to assume the presence of independent organisms in each contagious disease. The younger generation of doctors and students disregarded with fiery enthusiasm the necessity of a practical proof, and was filled with the conviction that all infection depended on the invasion of parasitic organisms. And since it was just the severest infections which were produced by the minutest plants and in which bacilli and cocci, or as they are called for short, bacteria, were found in greatest abundance there was circulated for some time that beatific axiom, "Infection is pollution by bacteria."

It was known, however, that parasitic animals and protozoa can also give rise to infection, and that between bacteria and fungi there is more than a slight difference, but for convenience the name of bacteria is retained as a general designation. Further, a peculiar circumstance happened in that for most of the so-called bacteria there were no botanical names. Owing to the novelty of the circumstances in which they are placed, botanists have not even yet succeeded in their customary duty of giving every new plant its special name, of determining its genus and species, and of assigning it to its proper systematic situation. This can easily be understood and forgiven. But it does not in any way alter the erroneousness of a method which attributes every impurity to bacteria on the sole ground of its contagiousness. It may be said that a contagious disease affords suspicions of a bacterial origin, but it should not be called simply bacterial. To do so hinders further research and lulls the conscience to sleep.

Some of the most important contagious diseases have succeeded in resisting the struggle to find in them a parasitic contagium. Fór example, many have been the sanguine hopes of finding the parasite of venereal disease and as many have been the failures. The coccus of gonorrhea alone has been discovered; the bacterium of syphilis itself remains a pium desiderium. With certainty was it expected that a pathological parasite would be tracked in variola; more than one bacterium was actually found, but none pathogenic. In hydrophobia (lyssa, rabies) all appearances seem to promise that it would prove to be a microparasitic disease; its contagiousness is undoubted; even a vaccine has, as with smallpox, been prepared, and yet no one has been able to cultivate a specific bacillus. And the same is the case with some of the most dreaded contagious diseases. Painful as it may be one can do nothing but wait, observe and experiment. Perhaps pathogenic bacteria will be found, but as long as they are not discovered all assumption is useless if not dangerous. To have learnt this is a good omen for a mighty stride in biological methods.

The other much further elaborated point in the study of infectious diseases is the question of the mode of action of infection. As long as infection by animal parasites was regarded as the type of infection in general, the destructive action was described as the result of a mechanical action just comparable to a bite or devouring. But the exact study of the larger entozoa and organoza soon brought about a complete conversion. Neither the Tænia solium nor the Tænia echinococcus possesses an oral opening. They undoubtedly take in nourishment and draw it from their autosites, or, as they are poetically called, their hosts, but this applies only to absorption of fluids. The feeding of bacteria and other vegetable and plant-like parasites has to be regarded in the same way. They certainly injure the tissues and organs in which they reside by the consumption of important material, but their action is not limited to this. This much we have already learnt in the study of fermentation and putrefaction. It is admitted that organic matter is destroyed by them, but in addition they produce new substances, some of them eminently poisonous. Thus, it has been known for centuries that alcohol is produced by fermentation. The putrefaction-poisons could for a time not be isolated; first Selmi and then Brieger achieved this result. Gradually one ptomaine after the other was found; for the whole group the new term of toxins has been introduced by Brieger instead of the name virus. They are in part crystalizable, invariably diffusible, chemical substances which are bound up neither with cells nor other formed elements, though they are produced by the cell-action of the parasites. They are nowadays described by preference as metabolic products, a perfectly platitudinous notion which has far more sound than sense. In former times people were contented to call them secretory products, and I venture to believe that it is better to stand by this term in order not to lose the analogy with glandular secretion.

There are thus two sides to infection; on the one the actual living parasites, on the other their often poisonous secretions. In the individual diseases now one, now the other property comes to the front. In the case of the hematobiotic parasites poison-formation may well as a rule count as more important; with those that live in the organs the deprivation of nutriment is much more immediately evident. The invention of artificial nutritive media for bacteria has now provided us with a convenient field for research and observation regarding all these questions.

It would be called carrying coals to Newcastle were I to sketch in London the beneficial effects which the application of methods of cleanliness has exercised upon surgical practice. In the city wherein the man still lives and works who by devising this treatment has introduced the greatest and most beneficent reform that the practical branches of medical science have ever known, every one is aware that Lord Lister, on the strength of his original reasoning, arrived at practical results which the new theory of fermentative and septic processes fully confirmed. Before any one had succeeded in demonstrating by exact methods the microbes which are active in various diseases, or in establishing the special functions that they perform, Lister had learnt in a truly prophetic revelation the means by which protection against the action of putrefactive organisms can be attained. The opening up of further regions of clinical medicine to the knife of the surgeon, and a perfect revolution in the basis of therapeutics, have been the consequence. Lord Lister, whom I am proud to be able to greet as an old friend, is already and always will be reckoned amongst the greatest benefactors of the human race. May he be long spared to remain at the head of the movement which he called into existence.

It remains for me to say a word concerning the other great problem, the solution of which the whole world is awaiting with anxious impatience. I refer to the problem of immunity and its practical corollary, artificial immunization. It has already happened once that an Englishman has succeeded in applying this to the nearly complete destruction of at least one of the most deadly infectious diseases. Jenner's noble discovery has stood its trial as successfully, except in the popular fancy, as he hoped. Vaccine is in all hands, vaccination is, with the aid of governments, spreading continually. In the same direction Pasteur worked resolutely, even with boldness; he introduced into practice the vaccines of chicken-cholera, anthrax, and rabies. Others have followed him, and the new doctrine of antitoxins is continually acquiring more adherents. But it has not yet emerged from the conflict of opinions. Still less is the secret of immunity itself revealed. Even if everything points to the view that immunity is based on the condition of the cells and the juices of their parenchyma, and not on the serum of the humors—these being probably only the means of transport for the minimizing as for the fluids—we must still become well accustomed to the thought that only the next century can bring perfect light and certainty on those points. The homeopathic notion that toxin and antitoxin are one and the same, seems so foreign to our biological ideas that very many experimental and practical proofs will be required before it can be admitted into the creed of the future. Before then we must at least have succeeded in finding a way of strengthening the cells in their fight with bacteria by means of immunity.

Let us, in conclusion, turn once more to the special cells which build up the body, and which arise from proliferation within the body. These exhibit numerous analogies with microbes. They also are independent living being, or, as Bücke said, elemental organisms implanted in the social structure of the body. They can be removed, transplanted, and grafted in a new situation. If they increase, and thus form a tumor, this can produce metastases by transplantation. But the process as such is always bound up with a certain number of living elements, is always cellular in character. It is not the flowing blood which makes a tumor or a cell; it is the mother cell from which all new formation originates.

From this consideration I have for decades drawn the conclusion that the local action of the cells, bound up as it is with certain matricial parts, dominates pathological laws, and must also determine the practice of physicians and surgeons. Cellular pathology demands above all treatment attacking the affected parts themselves be this treatment medical or surgical. It is with great joy that I see this deduction ever becoming more widely generalized, be it with more or with less conscious knowledge. Hence follows in surgery the recommendation of early operation or destruction of the focus of disease.

But cells also, just as bacteria, exercise chemical influences. Apart from the destruction which they effect by absorption, they secrete chemical substances. These appear first as tissue-fluids, passing later into the circulation. Thus arises a change in the composition of the flowing juices, particularly of the blood, in fact a dyscrasia. This is, as I have always explained, a secondary dyscrasia, quite distinct from the primary dyscrasias of the humoral pathologists, by localization of which topical disease, and particularly tumors, were supposed to arise. According to my view, each dyscrasia is determined by the taking in of products of tissue-secretion which may now be called metabolic products, or according to the old dictum, recrementitious substances. The tissue-juice, and the excreted material which is returned into the body have of late years gained much esteem. The semen, which I myself have always indicated as the classical example of such a tissue-juice, and exhibited as the prototype of secretion by tumors and organ-cells, has provided materia medica with spermin, as has the thyroid juice with thyroidin and thyroiodin. New substances, some resembling alkaloids, others albuminates, are isolated from various organs, experimentally tested and technically worked up. So arose injection or serum-therapeutics, on the results of which we are not yet in a position to pass a final judgment, though every one who is sufficiently unprejudiced must admit that they have in many cases been good. Experience will determine the value of these methods; you must learn by the aid of practice to deduce the lasting theoretical truths. But never forget that the source of all these substances and secretions is the cell-activity of living tissue, and that its therapeutical or pathological action on the individual organs or tissues can thus accomplish no aim beyond that of exercising a regulatory influence on cell-activity. May the medical school of Charing Cross Hospital continue upon the newly opened path with zeal and good fortune. But may its students at the same time never forget that neither the physician nor the naturalist dares dispense with a cool head and a calm spirit, with practical observation and critical judgment.

ABSCESSES OF THE LIVER.*

BY ED. E. FIELD, M. D.,
Norfolk, Va.

*Read before Medical Society of Virginia, in session at Virginia Beach August 31, 1898.

This title has been selected as embracing all those conditions of the liver in which pus is present, whether it be a primary abscess or one secondary to some other cause.

This paper will be limited to the *etiology*, *symptoms*, *diagnosis*, *and treatment of such abscesses*, *and the history of a limited number of cases* introduced to illustrate the principles involved.

It is assumed that all present are thoroughly familiar with the anatomy and physiology of the liver; so reference will not be made to the structure or functions of the viscus, except as occasion may require.

The symptoms and treatment of abscess can be more readily appreciated when the underlying causes are understood.

The *causes of abscess* are, for the sake of convenience, divided into two classes: (1) The predisposing, and (2) the exciting.

It can be readily seen that any condition tending to diminish the power of resistance of the liver substance to disease, may be classed as a predisposing cause of abscess.

Among the predisposing causes of abscess may be mentioned:

(1) Alcoholism.
(2) Residence in tropical climates.
(3) Any abnormal condition of the parenchyma caused by—
    Malaria.
    Syphilis.
    New growths.
    Cardiac insufficiency.
    Renal insufficiency.
    Hyperamia of liver.
    Anemia of liver.
    Tuberculosis.

It is reasonably certain that syphilis and tuberculosis do not directly act as exciting causes of abscesses; but the gummata of the former and the broken down nodular masses of the latter offer a suitable nidus for the development of any of the pus-forming germs which may be present in the systemic or portal circulation.

While some authorities claim that in abscess in infants, tuberculosis is the exciting cause, the above is the most rational explanation. It has also been pretty clearly demonstrated that malaria is only a predisposing cause, as the organism of Laveran causes degeneration of the hepatic cells, and has never been known, *per se*, to produce pus under any other circumstances.

Renal insufficiency from sclerosis causes an imperfect depuration of the blood, and a consequent increase of the hepatic activity and hyperæmia, and cardiac lesions inducing congestion predispose to abscess. The effects of alcohol are too well known to need further comment.

Residence in hot climates is undoubtedly the most frequent predisposing cause of hepatic abscess. Europeans resident in India are often attacked with abscess through disregard of the hygienic rules of the tropics; although the disease is also prevalent among the natives.

Men seem to be more subject to the disease owing to their greater exposure to alcohol and syphilis, the proportion being about 30 to 1.

Among the *exciting causes of liver abscess* should be mentioned in the order of their relative frequency—

(1) Dysentery (mainly tropical dysentery), in which the amœba coli is generally present as a causative factor.
(2) Extension of inflammation from adjacent structures.
(3) Pylephlebitis.
(4) Phlebitis of the umbilical vein.
(5) Suppurating hydatids.
(6) Actinomycosis.
(7) Trauma.
(8) Suppuration of gall bladder.
(9) Typhoid ulcer.
(10) Tuberculosis,

Tropical dysentery seems to be far the most frequent cause of liver abscess. Manson says: There can be no question as to the existence of an intimate relationship between dysentery and liver abscess. Numerous and well-authenticated statistics, as well as every day experience attest this. In 3,680 dysentery autopsies, made in various tropical countries, and collated by Woodward, 779, (21 per cent.) revealed abscess of the liver. To quote recent Indian experience: According to the Annual Report of the Sanitary Commissioner with the Government of India for 1894, out of 465 European soldiers who died from dysentery in India during the period 1888–'94, 161 (35 per cent.) had, in addition to dysenteric lesions, abscess of the liver. Conversely, in Egypt, Kartulis, in an experience of over 500 cases of liver abscess, elicited a history of dysentery in from 55 to 60 per cent.; Zancarol, also in Egypt, in 444 cases, elicited a similar history in 59 per cent.; and Edwards and Waterman, in 699 collated cases, elicited a like history in 72.1 per cent. During the period 1870–'95, of 45 cases of liver abscess treated at the Seaman's Hospital, Greenwich, and collated by Mr. Johnson Smith, postmortem evidence, or a distinct history of dysentery was obtained in 38 (84.4 per cent.)

These figures are conclusive as to the existence of an intimate relationship between dysentery and liver abscess. There is good reason, however, for believing that, while they represent the truth, they do not represent the whole truth, and that the association is even more frequent than they indicate.

The question of the amœba coli being the organism producing dysentery as claimed by Councilman and LaFleur, Kartulis and others, and denied by Celli and Fioca, is not within the scope of this paper. Certain it is that in the large proportion of cases of liver abscess, the amœba can be demonstrated.

As illustrating the connection between dysentery and abscess of the liver, I will introduce the following case:

CASE I.—A. B., British sailor, aged 60, admitted to hospital ——; had been sick four weeks with dysentery. Temperature ranged from —— to ——. Dysenteric stools frequent. No symptoms referable to liver. A mass about the size of half an orange and slightly tender on pressure, was felt in right iliac region. Patient died four days after admission, and autopsy showed the liver studded with small abscesses which contained the amœba, and ulcerations throughout the colon. The mass in iliac region proved to be the right kidney. Unfortunately, the specimens were destroyed before they could be examined microscopically.

Symptoms—Usually, when the patient comes under observation, the symptoms of hepatic abscess are weight and fullness in right hypochondrium, pain of variable intensity, but usually dull and aching, often referred to right shoulder. Tongue heavily coated, bowels usually move frequently, and stools may or may not be alcoholic as pressure from abcess may affect bile duct. There is usually insomnia (see Case II). Temperature is variable as in other cases of hectic, sometimes being sub-normal, and then suddenly rising to 104 to 105. The decubitus is right lateral or dorsal, usually with knees drawn up. Palpatation shows enlargement of the liver, often extending as low as the umbilicus. The enlargement is by no means symmetrical, but extends in whatever direction the abscess is located. In case number two, liver extended downward nearly to the umbilicus, while in number three it extended scarcely below the edge of the ribs. There is often tenderness on pressure or percussion over the liver. Respirations are shallow and more frequent than normal. Rigors are not uncommon, and patient often has night-sweats. Rapid emaciation is the rule. Complexion is generally muddy, and cachectic in appearance, but distinctly marked jaundice is rare. Spleen is rarely enlarged. A dry hacking cough, evidently a reflex from irritation of the diaphragm or from an inflamed condition of lung or pleura over the seat of abscess, is not unusual. Should the abscess discharge through the lung, the cough may be very severe, and sometimes causes vomiting. It should be borne in mind that hepatic abscess often closely simulates malaria, and where there is a doubt of the diagnosis, quinine should be withheld until the blood can be examined for the plasmodium. Manson thus emphasizes the similarity of the symptoms of the two diseases:

"Perhaps the most common error is to regard the hectic of liver abscess as attributable to malaria. The regularity with which the daily fever recurs, the daily chillness or even rigor coming on about he same hour, the profuse sweating, and other circumstances so compatible with a diagnosis of malaria, all contribute to this mistake. So common is the error, that Osler says he hardly ever meets with a case of liver abscess which has not been drenched with quinine. My experience is the same. I have seen medical men make this mistake, not only in their patients, but in their own persons. If carefully considered, there are several circumstances which should obviate so serious an error.

(1) No uncomplicated ague resists quinine in full doses.

(2) In malaria, if the liver be enlarged, the spleen is still more so; the reverse is the case in liver abscess.

(3) The plasmodium cannot be found in the blood in non-malarial hepatitis.

(4) In liver abscess, the fever is almost invariably an evening one; in malaria it most frequently comes on earlier in the day.

(5) Quotidian periodicity, contrary to what is the case with tertian or quartan periodicity, is by no means pathonomonic of nor peculiar to malaria.

(6) The almost invariable history of antecedent dysentery or, at least, of bowel complaint in liver abscess."

Case II.—Michael Quinn, fireman of steamship; native of England; admitted January 31st, 1897; been sick fifteen days; pain in region of liver; insomnia, bowels torpid; temperature 98.6° pulse 68; respiration 24. Had lost flesh and felt unwell for about a year; free drinker: gave history of syphilis. Physical examination showed a greatly enlarged liver extending from about the fourth rib anteriorly down as far as the umbilicus. The liver could be felt through the abdominal walls as a hard, more or less elastic mass, but there was no fluctuation. The lungs were normal; spleen negative, bowels somewhat constipated, and stools alcoholic. Respiration accelerated. Diagnosis of hypertrophic cirrhosis was made. Temperature rose next day to 100.4°. Podophyllin and sodium phosphate were given, and an application of nitro hydrochloric acid, one drachm to two pints, made to the region of the liver. For two or three weeks the treatment alternated between sodium phosphate and nitro-hydrochloric acid without any improvement of the symptoms. Finally slight fluctuations was felt just below the ribs, and an aspirating needle introduced. Pus was found, and an incision made two inches below and nearly parallel with ribs of the right side. Slight adhesions only were found, and the capsule was stitched to the wound and the abscess carefully opened. About four pints of pus, bile, and hydatids were discharged, and, after careful exploration with the finger, a glass drainage tube was introduced, packed with iodoform gauze, and heavy dressing applied. The patient reacted well and made an excellent recovery. It is a noteworthy fact that the temperature of this patient rarely went above 99° and never exceeded 101.4°, and, after the operation, was persistently sub-normal, at one time falling to 96°. I neglected to state that the wound was washed out each day with sterilized water. A prominent feature in this case was insomnia, which was partly due to pain.

CASE III.—Moosa Allo, Hindu sailor, age 35. Temperature on admittance, 100.4°; pulse 88; respiration 22. Tongue pale, broad, and covered with a heavy, white coat. Several copious, frothy, slate-colored stools daily.

Apathetic. Had been sick for two weeks. Temperature variable, the extremes being 96.2° and 103.4°. It was usually lower in the morning, but not infrequently the remission was in the afternoon. Diagnosis of atypical typhoid was made.

Widal's test was not practicable, and, on account of the dark color of the patient, it was impossible to verify or disprove the diagnosis through the evidence of petechial spots.

The liver was enlarged, but extended a very short distance below the ribs. Dullness extended from the fourth rib in front and fifth on the axillary line to point described. His feet and legs became œdematous, and pain increased.

An aspirating needle was introduced between ninth and tenth ribs, and showed pus. A distressing fit of coughing showed that the pleura had been punctured, and the operation did not clear up the diagnosis between empyema and hepatic abscess, although the pus looked like that from the liver. An incision was made, and about two and a half inches of the tenth rib resected. The pleura was found to be healthy, and the lung having been forced upwards by pressure, the outer and inner layers of the parietal pleura were stitched together. The needle still remaining *in situ*, the right leaflet of the diaphragm was opened and stitched to the capsule of the liver. There were no adhesions, an incision was made into the liver, and about three pints of chocolate-colored pus evacuated. Iodoform gauze was packed around the wound and a glass tube introduced. Practically the same treatment was adopted as in the preceding case. Patient improved for awhile, but succumbed in about two months to the constant suppuration, which was about a pint daily. As in case two, the temperature after the operation was always subnormal, and at one time fell as low 94 degrees. An autopsy was held, and the liver was seen to contain a cavity about as large as an orange, surrounded by healthy tissue. The right pleura was adherent and contained about a pint of pus. Right lung was compressed and small. Adhesions between liver and diaphragm were firm. There was no pus in abdominal cavity.

Treatment—When the diagnosis of abscess has been satisfactorily made, the only rational treatment is to evacuate it as soon as practicable.

First. Ascertain a point of fluctuation, if possible, or even a probable point of suppuration, and introduce an aspirating needle under strict aseptic precautions. A rather large needle should be used, as liver pus is generally very thick, and will not pass through a fine needle. Push the needle deeply into the liver, pull back the piston, and if pus does not flow, withdraw the needle slowly, in order that any pus cavities which may have been traversed by the needle may drain into its lumen. Under no circumstances push the piston down during the removal of the needle, lest pus be forced into the peritoneum or pleura, (but maintain the vacuum.)

If no pus is found, withdraw the needle until the point is near the walls, and changing the direction of the needle, re-introduce, as in the previous manner.

This procedure can be repeated several times without danger, provided you are careful about your asepsis. This should be done under anæthesia, as it is quite painful, and if the pleura is punctured, may give rise to unpleasant reflex symptoms. It is claimed by some writers that, even if no pus is found, this procedure will often relieve the existing symptoms.

Having located the abscess, leave the needle *in situ* and carefully dissect down until the peritoneum is reached. If the incision is below the costal line, and if adhesions to liver are satisfactory, open the liver and explore abscess with the finger, due regard being had for the adhesions. If there are no adhesions, and the case is not extremely urgent, pack the wound with iodoform gauze for forty-eight hours, or until adhesions are sufficiently strong to prevent infection of the peritoneum. If the case is urgent, suture the capsule of the liver to edges of the wound before opening the abscess.

If the abscess is covered by the ribs, it will be necessary to resect about three inches of at least one rib, and after stitching together the right leaflet of the diaphragm, and the capsule of the liver, open the abscess, as in the preceding case. In either event, the hæmorrhage will be considerable, but can usually be pretty easily controlled by packing around the tube, which should be of glass five-eighths of an inch in diameter, and fenestrated. After washing out the abscess with hot saline solution, or sterilized water, put on a heavy dressing and apply an adominal binder. The after-treatment should consist in irrigation and dressing the wound at least once a day. In order to cause the tube to drain properly, it should be packed loosely with sterilized gauze for its capillary effect. Owing to contraction of the liver, after evacuation of the abscess, the direction of the tube will be changed so as to necessitate sometimes the use of a curved tube.

The bowels should be kept open. Tonics and a generous diet should be given to combat the large drain from suppuration. It is well to put the patient in a rolling chair, as soon as possible after operation, and wheel him into the open air.

It is needless to say that every precaution should be used to prevent bed sores. Patient should recline on right side as much as possible, to facilitate drainage.

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EDITED BY

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INFLUENZA.

Influenza is once again claiming its victims among us, and it must be remembered that the disease has its protean aspects. Leichtenstern makes the following distinctions regarding the malady: Epidemic influenza vera due to infection by the bacillus of Pfeiffer; endemic epidemic influenza vera which seems to follow for several years in the wake of a pandemic, caused by the same bacillus; endemic influenza nostras, catarrhal fever or pseudo influenza, usually termed the *grippe*, the cause of which is at present unknown and which is seen more or less during every winter and spring. It is now generally admitted that the bacillus of Pfeiffer is the cause of influenza vera and that the disease is highly infectious, as it spreads rapidly from a certain focus through the ordinary roads of travel, but goes no faster than it can be carried in this manner. The disease assumes very varied types, due we suppose to the bacillus attacking that portion of the human organism which offers least resistance and which differs in different individuals. The types are usually classified as the gastro-intestinal, respiratory, nervous, and febrile forms. This latter type we wish to speak of in particular as it may be of importance to some one as an aid in differential diagnosis. The fever is sometimes almost the only symptom of this form of influenza and resembles very much septic absorption from pus or septic poisoning, with frequent chills and a variable fever at one time high and in a short space of time almost normal, then a chill and rise of temperature. This may continue for days and even weeks and may lead to a mistaken diagnosis of typhoid fever or continued type of malarial fever. Usually there is great prostration, out of proportion to the apparent severity of the disease; neuralgia is a frequent symptom, particularly affecting the supra-orbital nerves and their branches and for the relief of which nothing seems to work so well as a blister over the spot. In the treatment of this type of the disease medicinal antipyretics must be used with caution in those of delicate constitution and weak hearts. In the more robust acetanilid, or, better, antikamnia combined with salol, is frequently of great service. Where there is much nausea the stomach should be given rest; if indicated, small doses of calomel may be given. The patient should be nourished by rectal feeding of peptonized milk. When the stomach becomes more quiet panopepton with vichy water is very grateful and well borne, as is also the white of egg, raw, with vichy or plain water. High irrigation of the bowels is of service, and moist hot application to the abdomen serves a good purpose. Quinin of course is indicated if mixed infection with malaria is present, which we have seen, although Anders states from statistics that during epidemics of grip the number of cases of malaria is diminished. There being no specific for the disease, careful nursing combined with baths, topical applications, judicious medical treatment of the symptoms and careful attention to proper nutrition and stimulation is about all that the best physician can do.

SHALL IT BE "SURGICAL INTERFERENCE" OR "SURGICAL INTERVENTION?"

We have never understood why authorities in surgery use the word "interference" when speaking of operative or surgical treatment. When a surgeon performs an operation for the correction of a deformity, the mitigation of pain or the saving of life, does he mean to say that he interferes? If it be interference then he is culpable; but certainly no operator wlll plead guilty to the charge of doing meddlesome surgery, and the inevitable conclusion is that the term "surgical interference" is a misnomer. Whenever we read it in text-books, or in current literature, we feel like substituting the word *intervention* for "interference," using the word intervention in the sense of interposition, or, better still, mediation—a coming between for a friendly purpose. The word interference suggests the idea of collision, clashing, opposition, officiousness, intermeddling, etc.

According to Webster: "A man may often *interpose* with propriety in the concern of others; he can never *intermeddle* without being impertinent or officious; nor can he *interfere* without being liable to the same charge, unless he has rights which are interfered with."

Let us see what Trench has to say. We quote: "In our practical use, *interference* is something offensive. It is the pushing in of himself between two parties on the part of a third who was not asked, and is not thanked for his pains, and who, as the feeling of the word implies, had no business there; while interposition is employed to express the friendly, peace-making mediation of one whom the act well became, and who, even if he was not specially invited thereunto, is still thanked for what he has done."

A few days ago we suggested this improved phraseology to two of our surgical friends, both of whom are teachers of surgery and liberal contributors to surgical literature. They agreed with us that the point was well taken, and announced it as their intention to adopt the suggestion. Speaking for ourselves, this journal will hereafter use the term surgical *intervention* instead of surgical interference, and we shall hope to see its general adoption by surgical writers. —*Richmond Journal of Practice.*

EDITOR'S TABLE.

The British foreign office, in co-operation with the Royal Society, has resolved to send out a commission of three medical experts to make an exhaustive study of African malarial fevers, and black-water fever in particular. The gentlemen selected for this important task are Dr. R. S. Christopher, Dr. J. W. Stevens, and Dr. Daniels, formerly of British Guiana, and after certain preliminary investigations in Rome and India, they are to proceed to Blantyre, where they will in all probability be engaged for about two years. Why cannot our own government appoint a similar commission to study the tropical fevers of our country? We are practically in ignorance regarding these fevers. We do not believe at all in Prof. Koch's theory that black water fever is quinine. poisoning. We do not see how a scientific man can make such an assertion. There are numberless cases where extremely large doses of quinine are given and the black water is not apparent. Long ago it was common in this section, now it is rarely seen. It occurs in patients who have not taken quinine in months. It is endemic in certain river bottom sections. We must not be too sure that it is malaria either, in the sense that it is due to the plasmodia of Laveran. It is well for progress for generally accepted ideas to be challenged. We believe that the term malaria should be strictly limited to the disease where plasmodia are to be found in the blood—in other words, Laveran's disease. We are convinced, from observation and experience, that black water fever is due to infection by an organism yet undiscovered. Let us hear from somebody who has had much experience with hemorrhagic fever. We know this journal goes to such men, and why can't they say something?

A new army hospital, the largest under the control of the government, is being constructed of Georgia pine in this city at a cost of $150,000. There will be several buildings, all designed and constructed with a view to permanency. The ground plan of buildings will be rectangular, with covered ways connecting all of the buildings with each other, and with the administration-building in the center. Each of the four sides of the quadrangle will contain a ward with a capacity of 250 beds. One ward will be devoted to surgical cases, and an enclosed passage-way will connect it with a modern operating-room. In addition to the general wards there will be private rooms for the accommodation of invalid officers. An unlimited supply of artesian water will be provided. Coal baseburners will supply heat. An ice factory is situated within a short distance of the site, and the cost of ice is small. The officers' quarters will be of two stories. The dormitories for the nurses and the hospital-corps will occupy two buildings. The chief surgeon will have a private residence.

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Ox Gall in Constipation—The *Therapeutische Monatschefte* (1898, p. 239) quotes *Le Monde méd.*, 1898, No. 1, for the statement that Plaff speaks highly of ox gall in chronic constipation due to weakened peristalsis of the small intestine. He uses it in pills coated with salol to hinder its absorption by the stomach. One to two grammes pro die are given before meals.—*The Dominion Medical Monthly.*

⁂

We have recently received a communication from Chicago, Ill., asking for our *rate* card and inquiring after the extent of our circulation. This information was furnished, and thereupon we were forwarded copy for one-fourth page, accompanied by check payment in advance, both of which were returned with the information that we did not care to *besmirch* our pages with such matter. The advertisement goes on to say that "the degree of M. D. can be lawfully conferred at home upon any undergraduate practitioners furnishing sworn statements from the county officers certifying that they have practiced medicine successfully for years." It also asserts that "students attending the medical college advertised may be graduated when competent, *independent of the short length of time attending.*" As a bait it is asserted that "the 'ad.' appears in the *Medical Brief*, of St. Louis."

We are sorry to see such an "ad." even in a *trade sheet.*

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PAMPHLETS RECEIVED.

Conjunctivitis—By W. H. Wakefield, M. D., Charlotte, N. C.

Impaired Ventilation and Drainage of the Nose the Most Common Causes of Nasal Catarrh—By Edwin Pynchon, M. D., Professor of Rhino-Laryngology and Otology, Chicago Eye, Ear, Nose and Throat

College; Senior Assistant Aural Surgeon, Illinois Charitable Eye and Ear Infirmary, Chicago, Ill.

Gastroptosis—Presented to the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1–4, 1897. By Chas. D. Aaron, M. D., Instructor in Materia Medica, Detroit College of Medicine, Detroit, Mich.

Intestinal Auto-intoxication.—By Chas. D. Aaron, M. D., Detroit, Mich., Instructor in Materia Medica, Detroit College of Medicine.

Chronic Catarrh of the Stomach—By Chas. D. Aaron, M. D.

State and Municipal Care of Consumptives.—Address delivered by invitation at the Thirteenth Annual Meeting of the Conference of State and Provincial Boards of Health of North America, at Detroit, Mich., August 11, 1898, by S. A. Knopf, M. D. (Paris and Bellevue, N. Y.), New York, Physician to the Lung Department of the New York Throat and Nose Hospital; Former Assistant Physician to Professor Dettweiler, Falkenstein Sanatorium, Germany; Vice-President of the Pennsylvania Society for the Prevention of Tuberculosis; Fellow of the New York Academy of Medicine; Laureate of the Academy of Medicine of Paris, etc.

Some Observations of General Interest Regarding the Course and Management of Cataract.—By J. H. Woodward, B. S., M. D., of New York City, Formerly Prof. Materia Medica and Therapeutics, University of Vermont; Formerly Prof. Ophthalmology, Otology and Laryngology, University of Vermont; Member of the Vermont State Medical Society; Member of the American Medical Association; Member of the New York Medico-Surgical Society; Member of the Society of the Alumni of Bellevue Hospital; Member of the Société Française d'ophthalmologie; Member of the New York County Medical Association; Fellow of the New York State Medical Association, etc.

Medical Service and Medical Fees—The Business Side of the Practice of Medicine—By C. H. Hughes, M. D., President of the Faculty and Professor of Psychiatry and Neurology, Barnes Medical College, St. Louis.

An Essay on the Reduction of Obesity—A Reliable and Harmless Way to Diminish and Cure Over-Fatness—By William T. Cathell, A. M., M. D., Baltimore. Read at the Ninety-ninth Annual Meeting of the Medical and Chirurgical Faculty of the State of Maryland.

Further Observations Regarding the Use of the Bone-Clamp in Ununited Fractures, Fractures with Malunion, and Recent Fractures with a Tendency to Displacement—By Clayton Parkhill, M. D., of Denver, Col.

Transillumination of the Stomach with Demonstration on the Person—By Chas. D. Aaron, M. D.

Acetanilid: Its Use as a Preventive Measure in Premature Expulsion of the Ovum—By Stephen Harnsberger, M. D., Catlett, Va.

The Value of Surgery in Nervous Diseases—By Henry Waldo Coe, M. D., Portland, Ore., in charge Mindsease Sanitarium for Nervous, Mental and Drug Diseases; Member of American Medico-Psychological Association and American Electro-Therapeutic Association; Consulting Neurologist to the Oregon State Institution for the Deaf, Dumb and Blind, etc.

Modern Treatment of Tuberculosis—By Charles Denison, A. M., M. D, Emeritus Professor of Diseases of the Chest, and of Climatology, Medical Department University of Denver; Ex-President American Climatological Association; Author "Rocky Mountain Health Resorts," "Climates of the United States in Colors," etc., Denver, Col.

The Aseptic Animal Suture; Its Place In Surgery—By Henry O. Marcy, A. M., M. D., LL.D., Boston, Mass., Surgeon to the Cambridge Hospital for Women; late President of the American Medical Association; President of the Section on Gynæcology, Ninth International Medical Congress; late President of the American Academy of Medicine; Member of the British Medical Association; Member of the Massachusetts Medical Society; Member of the Boston Gynæcological Society; Corresponding Member of the Medico Chirurgical Society of Bologna, Italy; late Surgeon U. S. A., etc.

The Surgical Treatment of Uterine Myomata—By Henry O. Marcy, A. M., M. D., LL. D., Boston, Mass., Surgeon to the Cambridge Hospital for Women; late President of the American Medical Association; President of the Section on Gynæcology, Ninth International Medical Congress; late President of the American Academy of Medicine; Member of the British Medical Association; Member of the Massachusetts Medical Society; Member of the Boston Gynæcological Society; Corresponding Member of the Medico-Chirurgical Society of Bologna, Italy; late Surgeon U. S. A., etc.

Nosophen and Antinosine in the Treatment of Genito-Urinary and Venereal Diseases, with Report of Cases—By Claude A. Dundore, M. D., Philadelphia, Pa.

BOOK REVIEWS.

Manual of Chemistry. A Guide to Lectures and Laboratory Work for Beginners in Chemistry. A Text-book specially adapted for Students of Pharmacy and Medicine. By W. Simon, Ph. D., M. D., Professor of Chemistry and Toxicology, College of Physicians and Surgeons, Baltimore; Professor of Chemistry in the Maryland College of Pharmacy. New (sixth) edition. In one 8vo. volume of 532 pages, with 46 engravings and 8 colored plates illustrating 64 of the most important chemical tests. Price, cloth, $3.00 net. Lea Brothers & Co., publishers, Philadelphia & New York.

Simon's Manual, sixth edition. The general practitioner and medical student are again under obligations to the author, who has succeeded as only a busy instructor can, in giving a large amount of thoroughly reliable matter in a clear cut, brief, still comprehensive style; and to the publishers for the handsome, attractive and handy volume, clear type, paper elegant quality. The science of chemistry is growing all the time, and one may devote his whole time to the subject and then not be master of the situation. In examining this book it seems to us that the author has done and said everything that should have been done, and omitted those things that are irrevelant. This he has done and kept within reasonable page limits without sacrificing a liberal and judicious distribution of the matter.

The work is divided into seven parts. The author commences by giving the fundamental principles briefly, so as to lay the foundation necessary for the thorough understanding of chemical phenomena.

Part II treats of the principles of chemistry; the author goes into the anatomic constitution of matter. No chapter of the book is of any more importance than this one, and none is presented in a more clear and concise manner.

Parts III and IV are devoted to non-metalic and metalic elements and their compounds. Under each of these chapters the symbols and atomic weights of the various metals and metalic compounds are given.

The Fifth Chapter is devoted in part to analytical chemistry, and will serve the student as a guide in analytical work.

Qualitative methods are chiefly considered, but a chapter is added giving all official methods for volumetric determinations.

Part VI treats of the principles of organic chemistry briefly, but sufficiently to give a clear understanding of the general character and a knowledge of the bodies, which are most important in medical science.

The Seventh, and last, Part treats of the principal facts of physiological chemistry, prepared especially for the benefit of the medical student.

Even the expert analyst will consult the admirably gotten-up test colors, which cannot fail to be very valuable to the student and render the work particularly suited for self instruction. We at once pronounce this the best chemistry we have ever examined. Few works of its size, or even larger, will meet the demands of so varied a class of students, either as a text-book or one of reference, and we believe it will go on its road of popularity through many more editions.

A Text Book of Obstetrics, by Barton Cooke Hirst, M. D., Professor of Obstetrics in the University of Pennsylvania, with 9 colored plates and 653 illustrations in the text. Cloth binding, $5.00 net. Sheep or half morocco, $6.00 net. Philadelphia, Pa.: W. B. Saunders, 926 Walnut St.

This work is the outcome of the author's twelve years' experience in an exclusive practice in obstetrics and gynecic surgery, and from his experience during the whole of his professional career teaching medical students. We venture to say that this work will, at an early day, become a leading text book. The author's *rich* experience and training peculiarly fits him for the preparation of a text book to serve as a guide to undergraduate students and practitioners.

The subject matter is divided, for convenience, into eight Parts. Part I, Pregnancy; Part II, Physiology and Management of Labor and the care of the Puerperium; Part III, The Mechanism of Labor; Part IV, The Pathology of Labor; Part V, The Pathology of the Puerperium; Part VI, Obstetric Operations, and Part VIII, The Newborn Infant. Each part is written in a clear, practical style peculiar to the author. We predict for this work a large sale, and no doubt the author will soon have to issue the second edition. The united thanks of the profession are due Dr. Hirst for the favor to the students and practitioners in giving them such a practicable well-written text book. The Reviewer lays it down, feeling sorry that there is not just a little more of it. We congratulate Mr. Saunders on the elegant style of paper and type and commend it to every student and practitioner.

A Text Book of Practical Therapeutics: With especial Reference to the application of Remedial Measures to disease and their employment upon a Rational Basis. By Hobart Amory Hare, M. D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. With special chapters by Drs. G. E. deSchweinitz, Edward Martin and Bartin C. Hirst. New (seventh) edition. In one octavo volume of 770 pages, illustrated. Cloth, $3.75; leather, $4.50, *net.* Lea Brothers & Co., Philadelphia and New York.

The first edition of this work appeared seven years ago. The author has thoroughly revised his work at each of the frequent calls for a new edition and the medical public may look to it for all the latest real advances in applied therapeutics.

The favor it has realized at the hands of the Profession is due to the very ingenious plan and to masterly execution of Dr. Hare. The volume consists of two parts, one on Drugs and remedial measures, and the other on diseases, each part being arranged alphabetically for convenience of reference.

The rational classification of Drugs meets our approbation, each of the two parts is written with the other in view and copiously cross-referenced, this is done for convenience affording the reader a ready-reference book to which he may turn in a moment for desired information. The subject of medical electricity has heretofore commonly found a place in most text books on Therapeutics. We notice in this volume it has been advisedly omitted since electrical Therapeutics have outgrown any work save one devoted alone to that subject;

the author embraces the opportunity, and makes the text conform to not only to the Pharmacopia of the U. S. but also to the British Pharmacopia. The author very wisely prepares two indexes, one of Drugs and one of diseases and remedies, the latter being annotated with suggestive doses and other useful information. In a word Dr. Hares' work is an unrivaled authority on Therapeutics, as well as an authoritive guide to the practice of medicine. The author's motto, "When called to guide a patient through an illness the Physician should be constantly a watchman, and therapeutist only, when necessity arises" is well worth remembering.

The Principles and Practice of Medicine, designed for the use of practitioners and students of medicine, by William Osler, M. D., Fellow of the Royal Society; Fellow of the Royal College of Physicians, London; Professor of Medicine in the Johns Hopkins University and Physician-in-Chief to the Johns Hopkins Hospital, Baltimore; formerly Professor of the Institutes of Medicine, McGill University, Montreal; and Professor of Clinical Medicine in the University of Pennsylvania, Philadelphia. Third edition, entirely revised and enlarged. New York, D. Appleton & Company, 1898.

This work and its distinguished author are so well known that it is only necessary for us to say that this is the third edition of the book. In its revision, as in former editions, the author shows his genius, deep learning and great ability, and he has brought this edition fully up to date in every sense. Much that is new has been added, and thirty-five articles have been thoroughly rewritten. What we admire in it is the author's terseness, which is full of depth, and the directness and simplicity of treatment characteristic of great men. The book partakes of the genius of its creator. The publishers have also done their part admirably.

Medical Diseases of Infancy and Childhood, by Dawson Williams, M. D., Physician to the East London Hospital for Children. In one 12mo. volume of 629 pages with 18 illustrations. Cloth, $2.50 net. Lea Brothers & Co., publishers, Philadelphia and New York.

This small volume is not intended to replace any of the larger or more voluminous text-books on this subject, but is intended as a handbook for young practitioners of medicine, who have not previously paid much attention to this subject. It is intended as a guide to the clinical study of disease as it occurs in infancy and childhood. The author does not describe fully diseases which present symptoms similar at all ages. His object is to indicate the special incidence of disease in childhood; to elucidate, as far as possible, the causes of this special incidence; to point out the peculiarities which the circumstances of child-life impress upon familiar diseases, and to detail the treatment rendered appropriate by the nature of the disease itself and by the peculiar susceptibility of the growing organism. In discussing the question of treatment prominence is given to the rational basis afforded by pathology, microscopy and clinical observation and investigation. The volume is well bound, with many illustrations in the text, and altogether a handy hand-book for reference.

The Medical News Visiting List for 1899. Weekly (Dated, for 30 patients); Monthly (undated, for 120 patients per month); Perpetual (undated, for 30 patients weekly per year); and Perpetual (undated, 60 patients weekly per year). The first three styles contain 32 pages of data and 160 pages of blanks. The 60-patient Perpetual consists of 256 pages of blanks. Each style in one wallet-shaped book, with pocket, pencil and rubber. Seal Grain Leather, $1.25. Thumb-letter Index, 25 cents extra. Philadelphia and New York: Lea Brothers and Co.

We hardly need to remind our readers that a new year will soon be upon us and that a new visiting list will be required.

For nearly half a century the one published by Lea Brothers and their predecessors has been a favorite. Revisions have been made through a series of years, until any further change would be neither desirable or practicable. Besides the blank daily records, it contains tables for converting the ordinary weights and measures into the metric system, the Fahrenheit scale into centigrade, instructions for the examination of the urine; important incompatibles: artificial respiration, poisons and antidotes, a very complete posological table in both systems of weights and measures, and a very handy list of several pages of therapeutic reminders, directions for ligation of arteries. In the back it has a patented thumb-index for general memoranda, obstetric engagements, vaccination, deaths, addresses and, last but not least, a cash record. Bound in limp leather it is the right size and weight and never wears out.

The Physicians' Visiting List for 1899, published by Messrs. P. Blakiston Son & Co., Philadelphia, is ready.

We are pleased to see that there is a tendency to cut out some of the medical literature that has been finding its way into these books. Most of this matter is out of place here and uselessly cumbers the volume. What has been retained in this List will prove a convenience to the physician, but more still might be omitted. It is not, or should not be, necessary for the physician to carry about with him rules for treating asphyxiated persons, for reducing the readings of different thermometers, or for ascertaining the day when labor may be expected. The suggestions in metric prescription writing and the table of doses in Apothecary and Metric systems are useful in the attempt to popularize the latter. The List has the usual departments for daily records and various memoranda. It is bound in flexible cover and the price remains the same—25 patients a week,

$1.00; 50 patients a week, $1.25; the same in two volumes, $2.00; perpetual, $1.25.

Diet for the Sick, by Miss E. Hibbard and Mrs. Emma Drant, matrons at two large hospitals in Detroit. 103 pages; board sides, postpaid, 25 cents. The *Illustrated Medical Journal* Co., Detroit, Mich., publishers.

This is the third edition of this handy and popular little bedside book. The recipes for sick dishes have all been tried, and are those largely used by the Detroit hospitals, where the two contributors of them served as matrons. Added to these are various Diet Tables, as for: Aæmia, Bright's Disease, Calculus, Cancer, Consumption, Diabetes, Dyspepsia, Fevers, Gout, Obesity, Rheumatism, Uterine Fibroids, etc., as given by the highest authorities. The booklet is intended to be given to the family by the physician, and for such purposes one half dozen will be sent, prepaid, on receipt of $1.00.

Landis Obstetrics, by Henry G. Landis, M. D. Revised and edited by Wm. H. Wells, M. D., assistant Demonstrator of Obstetrics, Jefferson Medical College, Philadeiphia. Sixth edition, enlarged and revised. Text elucidated with 47 illustrations. Price, 80cts., Philadelphia, Pa., P. Blakistons Son & Co., 1012 Walnut St.

The necessity for the production of the sixth edition of this valuable self-help indicates the esteem in which it has for years been held by students and practitioners of medicine. Many changes have been made since the last edition, the book is thoroughly modern and up to date.

A Treatise on the Science and Practice of Midwifery, by W. S. Playfair, M. D., LL.D., F. R. C. P., etc. Seventh American from the ninth English edition, with seven plates and 207 illustrations. 687 pages. Published by Lea Brothers & Co., Philadelphia and New York.

This book is also a well known old friend and comes to us now after twenty-two years, in a new dress; this alone speaks for its value. The author's style is directness, and he is not verbose; having a thing to say he says it and goes on to something else. The chapters treat of Anatomy, Pregnancy, Labor, Operations and the Puerperal State. The colored plates are a feature of this edition. It is a book well worthy a place in every physician's library. The discussion of the operation of laparo-elytrotomy could well have been omitted, or simply mentioned as history.

PROGRESS
—OF—
MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF
W. Z. HOLLIDAY, M. D.,
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RALSTON LATTIMORE, M. D.,
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Ichthyol Externally in Rheumatism.—Ichthyol has been shown to be an excellent remedy for the external treatment of acute articular rheumatism, particularly of the chronic form, because of its analgesic and reducing properties. Friedrich Kölbl (*Wien. Med. Ztg.*, XLIII, Nos. 5 and 6), reports having treated 117 cases of acute articular rheumatism at the most various stages and with the most satisfactory results. The method of application is as follows:

The ichthyol solution, prepared, for instance, from ichthyol 50 parts, glycerin 20 parts, and water 30 parts, or from ichthyol and water in equal parts, is warmed, and mull or calico bandages impregnated with it. With these prepared bandages the affected joint is lightly bandaged. It is advisable to clean the affected part with warm water previous to applying the bandage, which should be covered with an impervious fabric to prevent evaporation. The joint so treated is next covered with dry cloths heated to from 40 to 60 degrees C., and these applications renewed every 10 minutes at first, and later, every half-hour. Instead of the solution, pure ichthyol may be used, or an ointment of equal parts of ichthyol and lanolin, which may be painted on the affected part with a soft brush. After the joint has been treated in the above described manner for three or four hours, according to the intensity of the affection, the ichthyol bandage is renewed, the hot applications being omitted, however, and the bandage is permitted to remain for from four to six hours in place. It is then renewed, and the joint cleansed and bound with a soft bandage. As a rule the pains are considerably reduced already after the first packing, the joints softer and more supple, and their movements freer, not only in parts directly treated with ichthyol, but in all the other joints. Repeated comparative trials have shown that hot packings alone do not effect even in the slightest degree, the satisfactory results yielded by ichthyol packings. In chronic acute articular rheumatism the treatment must be carried out for an extended period in order to obtain lasting result. These ichthyol packings, therefore, fully replace the sulphur and mud baths heretofore recommended. Many invalids, unable to visit any health resort, were cured by the application of the hot ichthyol packings every evening on return from the daily occupation. The treatment is also of great benefit in true gout (arthritis deformans). F.

CEREBRO-SPINAL FEVER.—In a lecture on the above, Osler (*Mary. Med. Jour.*, Vol XXXIX, No. 14, p. 717), draws attention to two points of very great moment in the diagnosis of the disease: Quincke's lumbar puncture, which enables one to make a comparatively early diagnosis, and the determination of the Diplococcus inintracellularis as the probable cause of the disease. The spinal puncture, as recommended by Quincke, is a perfectly harmless procedure, though it sometimes requires a little skill to get into the canal. Not only does it do no harm, but in some cases it seems to be beneficial in relieving the pressure. If a dry tap be the result it does not mean that meningitis is not present, for the exudate in the meninges may be of such a buttery consistence that it cannot flow. The determination of the presence of the diplococcus in the fluid obtained by lumbar puncture makes the diagnosis positive. The prognosis in cerebro-spinal fever is by no means hopeless in a large proportion of cases, though that in other forms of meningitis, due to the bacillus of tuberculosis, or the streptococcus, or the pneumococcus, is very fatal.

TUBERCULOSIS OF THE THROAT—ITS TREATMENT.—In the treatment of tuberculosis of the throat, H. M. Thomas (*Jour. of Am. Med. Assn.*, Vol. XXX, No. 22), advises to combine constitutional with local measures. The treatment of the local lesions varies with their character, position, extent, accessibility, topical application, and influence on deglutition and respiration. Circumscribed thickenings, with a non-broken surface, may be treated with creosoted iodine in glycerin or menthol in solution of olive oil. An ulcerated larynx can be relieved with an insuffilation of iodoform in solution with sulphuric ether. Laryngual secretion should be removed by direct application of alkaline sprays. When tuberculous ulcers are on the surface, lactic acid, well rubbed in, with a 20 to 40 per cent. strength is valuable. When the resultant eschar falls, repeat the process until cicatrization is established. Where the mucous membrane is not broken, lactic acid, the writer believes, is negative, while 20 per cent. solutions of menthol, in olive oil, injected into the larynx are efficacacious. Cough due to ulceration may be mitigated by insufflation of morphine in one-sixteenth to one-half grain strength. Submucous injections, 3 per cent of cocaine hydrochlorate for pain; orthoform is a valuable analgesic. Painful deglutition can sometimes be relieved by having the patient lie on his stomach, with head and arms over the bed, the feet being higher than the body. In this position water and nourishment can be siphoned through a tube reach-ing from a receptacle held below the mouth. Much temporary relief can be afforded by the inhalation of vaporized antiseptic oils, which, being carried directly to the abraded surfaces are deposited well over them, and through absorption and mechanical protection greatly allay many of the distressing symptoms attendant upon laryngeal tuberculosis.

Creasote in Gastric Affections.—According to Zangler of Zurich, in a paper on creasote, contributed to the *Correspondenzblatt für Schweizerische Aerzte*, the present tendency to think that the larger the dose of this drug the better in phthisical cases, is by no means justified by experience, for the best results are often obtained with very small doses indeed. He believes that their beneficial effect is due to their action on the stomach, causing it to do its work better, and so to improve the nourishment of the system. He finds that in many cases of purely gastric affections, with or without diarrhea, or other intestinal symptoms, minute doses of creasote will often succeed when other remedies have failed. In the gastroenteritis of children, and in the vomiting of pregnancy, he has been greatly struck with its effects. The doses he gives vary from 1-11 gr. in children to 1-3 gr. in adults. He prescribes it with enough spirit to dissolve it in a spoonful of water, with or without water. Black coffee or mint tea may be employed, if necessary, to disguise the taste. When infantile diarrhea exists, without vomiting, he has often found creasote valuable. In the milder forms of the vomiting of pregnancy small doses of creasote have always produced an improvement, and he thinks that even in severe cases a trial of the same treatment should be made.—*Public Health*, August.

Galvanic Treatment of Vomiting.—Apostoli read a note at the French Society of Electrotherapy, session of July 21, 1898, on the galvanic treatment of vomiting and its best operative technic. His general conclusions were as follows:

1. Galvanization of the pneumogastric nerves, applied according to the rules formulated in 1882 and 1884 by Dr. Apostoli (which comprise the seat, the nature, the dose, the duration, the time and the number of applications), is the most frequently successful means employed for vomiting of pregnancy and most gastric troubles of hysteria.
2. The best method of galvanization of the pneumogastrics is that which permits use of the maximum density of current over the nerves, whether by placing the positive pole single or double, over the nerve, or preferably by placing over each nerve an opposite pole.
3. The bipolar method of using the largest total of lines of galvanic current circulating from one pole to the other, is the method of choice, superior for rapidity and efficaciousness to the monopolar method, which, having only one pole active (simple or divided), can,

all other things being equal, use only the smallest electrical density or the feeblest total of lines of galvanic current.

4. The clinic has confirmed by sixteen years of Dr. Apostoli's practice the superiority of the bipolar method which he recommends and its incontestable advantages in the immediate symptomatic cure of the nervous troubles of the pnenmogastrics (vomiting, gastralgia, nausea).—*Am. Medico-Surg. Bulletin.*

Kryofine as an Anodyne.—Some months ago, when our attention was first called to kryofine as an anodyne there was reason to hope that we had in it a very valuable addition to our pain relieving remedies, especially since it was said to be free from the depressing effects of the analgesics of the coal-tar group. Having used it in quite a number of cases of neuralgia, I have not been rewarded by obtaining the results hoped for. In fact, I might say, that from doses ranging from five to ten grains I have not been able to get any results. H.

Nausea.—For nausea and vomiting in zymotic diseases the following prescription will be found very useful:

℞ Carbolic acid,............... gtts. iij.
Glycerine,.................. ʒii.
Aqua comphoræ......... q's ad ʒij.
M. Sig..................... ʒj.

Every half hour when nauseated. H.

Quinine in the Treatment of Neuralgia.—In many neuralgic affections, especially when there is a malarial element in the case, quinine is one of the most valuable remedies at our command. In order to get prompt results it is necessary to give it in a single large dose instead of the usual dose of five or six grains. Fifteen grains given once or twice a day, will be found a sufficient quantity in most cases. H.

Argonin in Gonorrhœa.—After an experience of about a year and a-half in the use of argonin in the treatment of gonorrhœa, the writer feels constrained to make a favorable report. The great advantage of using it is the perfect safety of it, and entire freedom from the risk of producing stricture. It is a mucous astringent and is destructive to the gonnococcus. The best way to use it as an injection and in the strength of twenty to thirty grains to the ounce of distilled water. The injections should be used early in the disease. The earlier the better. In this way you effectually destroy the germs before they multiply to any extent or make inroads upon the delicate mucous membrane of the urethra. It is not necessary to use any other than the local treatment. The time necessary to effect a cure is much less than with any other treatment with which I am familiar. In gonorrheal ophthalmia it is equally efficacious. The strength of the solution to be employed is the same. I have used it in solutions up to forty grains to the ounce. Thirty grains is as strong as I have found necessary and this is safe in the hands of the mother or nurse. Solutions of this strength do not give pain, and it is not necessary to work it away or neutralize it, as must be done when using solutions of nitrate of silver in the eye. H.

PROTARGOL IN GENITO-URINARY THERAPEUTICS.—Dr. Paul Guillon employs a 2 per mille solution for vesical irrigation, and finds that it is a complete disinfectant. For gonorrhœa in its various stages, whether used in injections, by irrigation without catheter or with special instruments, or in instillations, the same results are obtained as with potassium permanganate or silver nitrate, perhaps a little less rapidly, but surely and with less local reaction, less recrudescence of the discharge during the first hours after its use, and particularly with no painful sensations before or after treatment. This is especially to be considered in instillations. A small detail of importance is that it does not stain the fingers of the surgeon nor the linen of the patient.—*Revue de Thérapeutique Médico-chirurgicale*, 1898, No. 14, p. 473.

THE TREATMENT OF NEPHRITIS HÆMORRHAGICA.—Dr. A. Kramer reports four instances of the use of methylene [not methyl] blue in dose of one and one-half grains thrice daily. The cause assigned for the appearance of the symptom was "chilling." After the use of this remedy there followed a rapid and complete disappearance of the blood from the urine. There was also observed a marked diminution in the amount of albumin and an improvement in the general condition. This effect upon albumin has been previously noticed by Netschajew, Lemoine, and, in pyelitis, by Dehio. The suggestion is made that possibly this substance may serve for making a differential diagnosis between this condition and hemorrhage due to carcinoma or tuberculosis.—*St. Petersburger medicinische Wochenschrift*, 1898, No. 20, S. 186.

A NEW PREPARATION OF QUININE FOR HYPODERMATIC USE.—Dr. G. Gaglio mixes 2 parts of quinine hydrochlorate or hydrobromate with 1 part of urethane and dissolves the mixture in 1 part of warm water. This gives a stable solution, permanent when cold, of a neutral reaction, and non-irritant. A new chemical compound is formed, because in treating this solution with ether the urethane cannot be extracted nor the quinine precipitated. In the organism quinine is liberated, which produces its usual physiological effects. As for the urethane in the dose employed, it has no action capable of interfering with that of quinine.—*Les Nouveaux Remèdes*, 1898, No. 13, p. 312.

HÆMATEMESIS AND MELÆNA NEONATORUM; TREATMENT BY CALCIUM CHLORIDE.—Dr. L. A. Parry reports a simple instance of the successful use of this remedy. Five-grain doses were given frequently, so that 160 grains were taken in three days. The hemorrhage began to lessen in twenty-four and ceased entirely in forty-eight hours. —*The Lancet*, 1898, No. 3907, p. 144.

MEDICINE.

UNDER THE CHARGE OF
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A STUDY OF THE LESIONS IN A CASE OF TRAUMA OF THE CERVICAL CORD SIMULATING SYRINGOMYELIA.—J. H. Lloyd (*Brain*, p. 81) reports the anatomical findings in one of two cases of this kind, the clinical features of which were published four years ago. During life the patient gave the appearance of syringomyelia, but for reasons given in detail in the original, Lloyd thought there might be inflammatory lesions (pachymeningitis hypertrophica) or perhaps necrosis. The autopsy was made five years after the principal injury. It showed old fractures of the cervical vertebræ, with deformity and callus, causing compression of the cord at the level of the third, fourth and fifth vertebræ. Above the fourth and below the eighth cervical root there was nothing abnormal, externally, on the cord. There were thickenings of the dura at the third and fourth posterior roots, and there was a mass of fibrous tissue at the exit of the seventh root, around a spicule of bone. The brain showed nothing abnormal. The microscopic examination is described fully and should be read in the original. Briefly stated, there was an irregular area of degeneration in the usual position of syringomyelia, with corresponding ascending and descending degenerations. A large portion of the posterior columns, the anterior columns, and the columns of Türck escaped the lesion. In showing the similarity of position to the lesion in syringomyelia, the author raises the question of the relation of trauma to the latter disease, the case reported being separated from cavity-formation only by trifling stages. Less speculative are the remarks on the bearing of the case on the questions of sensory conduction in the cord. Tactile anæsthesia was present in the right foot and leg as high as the knee. It resembled the segmental anæsthesia so often found in hysteria, and the author thinks may have been of that kind. There was also hemianæsthesia to pain and temperature in the side opposite to the main lesion and to the motor paralysis. This may be explained by believing with Van Gehuchten that the long fibres of the posterior columns, passing in by the posterior roots, serve for the conduction of tactile sensibility. These fibres pass up into the nuclei graciles and cuneati, and in the present case there is no evidence of degeneration of these fibres at or about their point of entrance into the nuclei. Van Gehuchten's view, that pain sense and the thermic sense are conducted through the gray matter by way of cells whose axis cylinders form part of Gowers's tracts, is also borne out by the conditions found, Gowers's tract and the direct cerebellar tract being degenerated on the side of the chief lesion all the way up. From these brief extracts the great value of the study made by Lloyd, and its importance to physiologists, as well as to clinicians and pathologists, can be easily seen.—*A. J. of Medical Science.*

MUSCULAR DEGENERATION IN BASEDOW'S DISEASE.—Askanazy calls attention to a condition to which little attention has been paid This is an atrophy of the voluntary muscles in Basedow's disease, with fatty infiltration. It was found in all the four cases examined by the author. The gross appearance was not unlike that in atrophy from non-use, but the distribution of the alteration in all the cases was such as to invalidate at once such an explanation. Of previous observers only Von Recklinghausen, Silcock and Bristowe, Farner and Haemig, and Hanau appear to have noticed the changes, but so uniform and striking were the lesions noticed by Askanazy that it seems likely his results will be generally confirmed now that attention is called to them. The changes were always evident in the muscles usually exposed in autopsies, including those of the eyes, the tongue, and in one case in the pharynx and œsophagus, and to a less marked degree in the thigh muscles. The diaphragm was always intensely affected. The naked-eye changes were usually distinct. Beside the general wasting, the muscle-fibres become pale and difficult to distinguish from fat. The interstitial lipomatosis varies from microscopic infiltration to large masses running into the muscles. Microscopically the alterations are well brought out by methods which stain the fat, such as Marchi's. Fat granules are seen in long rows in the muscle fibres, which are narrow and their nuclei are increased in many places. The nuclei of the muscle cells also often show degenerations. The intramuscular nerves, the spinal cords and brains showed no alteration of note, and none that could be associated with the atrophy. The heart muscle showed pigmentation, slight fatty degeneration, and more or less interstitial myocarditis, but was never affected like the voluntary muscles. The author rejects the views that the changes can be trophic or marantic, and looks on them as toxic. It is noteworthy that Langhans has recently shown the existence of a similar muscular degeneration in cretins, and in the same connection it is interesting to recall that Lemke suggested the existence of a muscle-poison in Basedow's disease. Mackenzie and Revilliod have also noted paraparesis in myxœdema. The clinical importance of the atrophy is obvious. Not only the marked weakness common in the disease, but also the tremor, may be readily explained, as was actually suggested by Mannheim in his recent monograph. Bryson's sign—diminished throracic expansion—can readily be explained by the degeneration of the diaphragm, and the exophthalmos by that of the ocular muscles, better than by any of the older theories. Askanazy gives a good account of the condition of the thyroid gland in his cases, showing, in common with other recent observers, that there is always an alteration of the gland, characterized by epithelial proliferation without increased colloid, in fact often without it. A short discussion of the theories of Basedow's disease ends the paper, the author naturally inclining to the view of Möbius, which, in fact, receives strong support from the observations made and the way in which they are utilized.—*Deutsches Archiv f. klin. Med.*, Bd. 61, p. 118.

THE ALTERATIONS OF THE BLOOD AT HIGH ALTITUDES.—Schaumann and Rosenquist publish (*Zeitschrift f. klin. Med.*, Bd. 35, H. 1–2, 3–4) the results of an extensive series of observations, demonstrating that the changes in the blood observed on mountains are due to an increased production of red corpuscles. The chief proof is furnished by the occurrence of young nucleated cells in the blood of pigeons kept in rarified air, beside an increase in the total number of corpuscles. A large number of observations are given proving the faultiness of other explanations, and the latter are criticised with great acumen. A copious bibliography assists in making this the most authoritative piece of work on the subject.—*A. J. of Medical Science.*

THE EFFECTS OF ANTERIOR POLIOMYELITIS ON THE UPPER NERVE CENTRES.—Probst adds another to the somewhat limited number of examinations on this subject (*Wiener klin. Wochenschrift*, 1898, No. 30). A man died at sixty-eight years, having had acute anterior poliomyelitis at four years. There was atrophy of the left arm and right leg. A history of long-continued pain and swelling in the extremities made it probable that the peripheral nerves also had been implicated. The brain showed atrophy of the central convolutions on both sides, more marked in the upper part on the right side. The left angular and marginal gyri were also less prominent than usual. Microscopically the cortex in these parts showed normal thickness, but all the cells were small, perhaps diminished in number, but well formed. The medullary rays were thin, the neuroglia of the outer cortical layer increased. In the internal capsules the fibres in the pyramidal tract were abnormally thin, but without signs of degeneration, and the further course of the pyramidal tract was atrophied. Cerebellum, pons, and copora quadrigemina were small, the olivary bodies small but of the same size. Microscopically the cerebellum showed no alteration. The cord showed atrophy of the lateral pyramidal tracts, especially in the lumbar portion, with the usual alterations of an old poliomyelitis. Probst draws the conclusion that the formed but still developing brain is affected by the disappearance of the peripheral neuron, though not to as great an extent after poliomyelitis as after amputation; that the cerebellum is affected by infantile spinal paralysis through paths as yet unknown.

THE LACTIC-ACID BACILLUS OF OPPLER AND BOAS.—Carl Sternberg has studied the biology of this organism, incited by a case in which an erroneous diagnosis of cancer of the stomach was based on the presence of the bacilli in the vomitus of a patient. The cultures from this, as well as those from a case of gastric cancer, showed a striking change of form under various conditions, becoming shorter and thicker on solid media (glucose agar), longer and slenderer in maltose bouillon. The author thinks that the short forms may often exist in the stomach without exciting interest, but that, in consequence of chemical changes, either with cancerous growths or otherwise, they assume the longer and more striking forms.

Much less valuable than these suggestive experiments were some on the agglutination of the bacilli by the serum of inoculated guinea-pigs.—*Wiener klin. Wochenschr.*, 1898, No. 31.

BLOOD COLOR-TESTS AND IRON IN THE BLOOD.—Jellinek (*Wiener klin. Wochenschr.*, 1898, Nos. 33 and 34) publishes the results of a careful and extensive series of observations on this subject. Among the points brought out by his work may be mentioned the confirmation of hæmoglobinæmia in chlorosis (red corpuscles in normal numbers). The chief result of the work was the confirmation of the view that the color-index of the blood as shown by such instruments as those of von Fleischl, even in the improved form devised by Miescher, is not always parallel with the amount of iron in the blood. The latter, he thinks, can be determined with sufficient accuracy for clinical purposes by the ferrometer of Jolles.

[In the latter instrument the iron in a measured quantity of blood is brought into solution and then compared with another solution of known composition. While it may be admitted that the ferrometer is a valuable addition to blood-diagnosis, it should at the same time be pointed out that it does not replace the older color-tests; and while it is more scientific in principle, it is important to remember that in order to give reliable results the instrument requires greater skill and also greater care than such instruments as that of von Fleischl.]

NEW ORLEANS POLYCLINIC.—Physicians will find the Polyclinic an excellent means for posting themselves upon modern progress in all branches of medicine and surgery. The specialties are fully taught, particularly laboratory work. The Twelfth Annual Session opened Nov. 24th, 1898. For further information, address New Orleans Polyclinic, P. O. Box 797, New Orleans, La.

GENERAL SURGERY.

UNDER THE CHARGE OF
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In this era of specialism, commonplace subjects like fractures hardly attract an attention commensurate with their importance. A moment's reflection will suffice to recall our deep interest, from a clinical to a medico-legal and humanitarian point of view, in this universally practiced field of surgery. Very few practice abdominal surgery as compared to the numbers who, from choice or necessity, treat fractures. In the treatment of no class of surgical troubles is there a need for more accurate technical skill and certainty; in no field do we more frequently meet with disasters, avoidable and unavoidable, which work injury to the doctor's peace of mind, if not to his professional reputation. It is not necessary to emphasize the fact that in many instances the surgeon is wholly blameless, but to establish this fact entails, in many cases, great inconvenience and possibly an expense. Occasionally this comes through attorneys who, in serving or sueing corporations, may endeavor to show contributory neglect on the part of the surgeon—in other words, that bad treatment and not the injury was responsible for the result. In a recent murder trial in which we were summoned as an expert, the defense tried to prove that the doctors who amputated the murdered man's limb were responsible for his death, and not the murderer, who, with murderous intent, shattered the limb with a shotgun. Of course we do not for a moment claim that all attorneys are unjust, per contra we have uniformly found them fair and willing to respect candor. This willingness on the part of attorneys should encourage medical witnesses not to be partisan. Medical experts are sworn and paid to tell the truth and to expose frauds. Partisan medical experts are an injury to the profession as a whole. Personally we plead guilty to the crime of having been biased. This, we fear, is not uncommon experience, and has lead to the idea that it would subserve justice to have medical experts appointed by the courts to aid in arriving at the truth. Judges and juries are quick to note biased opinions of an expert, and this is sure to destroy his usefulness. We recall a ludicrous instance which recently occurred in one of our courts. It was a case involving a decision as to whether death occurred from the shock of trauma or typhoid perforation. The judge said to one of the medical witnesses, who was on the side of typhoid fever perforation: "Doctor, if you shot at a rabbit and did not hit him but he tumbled over dead, what would you say was the cause of death?" "By typhoid fever," promptly replied the well drilled medical expert. The lack of courage to say, I do not know, or that the question involved is an open one, offers many stumbling blocks to the medical expert. In so many instances the surgeon is not in any way responsible for the bad result in the treatment of fractures. We recall a case in point. A fracture in or near the elbow resulted in ankylosis, a suit was the outcome. "I knew the arm was not correctly set," said a loquacious woman witness. "How did you know it?" "I took the dressing off and looked at it." However, without any meddling on the part of others, bad results are, in many instances, unavoidable. A review of some of them may be a solace to those of us who meet with such results, may be a protection to us in the event of a suit, or what is perhaps of more importance than all, may enable us to help some brother practitioner who is placed in the awkward position of needing a defence. Attention has often been called to the fact that mistakes on the part of abdominal surgeons do not live to hobble through life as walking advertisements of the doctors' poor skill. They are buried out of sight, while the patient with a deformed limb meets us upon every occasion and will not considerately die or move away. The surgeon may have exercised exceptional skill in saving a mangled limb, with its shattered bones, torn and contused soft parts, blood vessels and nerves. He may have taken many times the trouble in saving a limb that an amputation would have entailed, and yet the damaged limb is exhibited for years as one of his bad pieces of work, while with pride the same patient would exhibit a stump as a beautiful piece of work. It is true that many bad results incident to fractures are due to imperfect coaptation and immobilization,* but apart from this there are conditions local and constitutional which bring about delayed union, non-union, visceous union, atrophy, paralysis, etc. We may have reduced the dislocated shoulder perfectly, but the broken glenoid rim or greater tuberosity may favor redisplacement on the one hand or limit outward rotation on the other. A damage to the musculo spiral nerve in its groove may be torn or contused at the time of the fracture, or pinched between the broken ends of the bone, and immediate manifestations be evinced, but such evidence may also not be appreciable until callus has been poured out and the nerve buried and pressed upon by the exudate. It goes without saying, we not only cannot anticipate such complications, but we are also powerless to prevent its occurrence. An epiphyseal separation may be perfectly adjusted and immobilized and yet, from some cause which we cannot anticipate or prevent, premature ossification of the epiphyseal cartilage may occur, with arrest of growth of the limb and permanent deformity. Such a separation may have given rise to a minimum amount of local disturbance and yet, by the above mentioned changes, may blight the growth of a lower limb. If the peroneus brevis is thrown out of its groove and its ligamentous attachments are torn, the simple sprained ankle, from which we promised a speedy recovery, may stamp us as poor prophets. We meet distressingly often a limping former patient, whom we treated for a supposed uncomplicated sprained ankle. It was not a simple sprain—was probably a fracture sprain —i. e., some part of the articular surface was broken off and bony union insured a damaged joint. A strip or fringe of periosteum may prolapse between any fragment, notably between the fragments of a broken patella and prevent union or give rise to long continued pain, loss of function, etc. In a fracture or dislocation of the elbow a portion of periosteum may be torn and yet bind the fragments together. Periosteum is not separated from healthy bone without tearing off some bone cells with it. In the regeneration, ossification of the bridge of periosteum may result and deformity be permanent. A tendon, notably in the lower extremity, may become adherent about the fracture, and traction on its fixed point may give rise to pain so acute as to incapacitate the patient. Pressure on blood vessels may cause gangrene, oedema, eczema, ulceration, varicose veins, etc. Thrombasis and gangrene are among the possibilities. sharp fragments may cut a tendon and its retraction entail failure of union, and deformity be an unavoidable sequence. Rheumatoid arthritis often fractures near or involving a joint, and is an outcome which we can neither anticipate nor prevent. While the future of compound fractures rests largely with the first dressing, we should recall the fact that infection may be carried to any suitable soil by the blood or by the lymphatics. In so many unavoidable ways bad results may occur in connection with the treatment of fractures, that we should be guarded as to our prognosis, careful in the matter of attention, and charitable to others when they meet with bad results in their practice. TAYLOR.

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* Fractured ribs are rarely perfectly immobilized, and yet non-union is equally rare. Fissure of the skull is perfectly immobilized, and yet a minimum amount of callus is poured out. [illegible]

CLINICAL REMARKS ON STRICTURE OF THE URETHRA.—The following classification is one which Harrison (*The Lancet*, April 23, 1898) uses for clinical purposes: First, those amenable to some form of dilatation; second, those found to be unadapted for such treatment, and where other measures should be considered; and third, those which may have been regarded as impassable strictures.

The first class includes by far the greatest number and all strictures in their early stages. When this process of treatment proceeds satisfactorily, as it usually does, the patient is soon able to undertake the management of his own case after he has been instructed in the use of the appropriate instrument. It is very easy to injure a stricture and so lose the way through it. On making an examination of this kind, the object should be to ascertain, without causing pain or bleeding, if possible (1) the presence and position of the obstruction, and (2) the degree of contraction which has been arrived at.

For this purpose the author prefers long, flexible bougies, twenty inches in length, which commence in a probe-point and gradually increase in size. They may be softened by placing them in warm water before use, and become so flexible that they will coil up in the bladder. Besides their use as exploratory instruments, he employs them to smooth out a rough urethra and make the access to a stricture funnel-shaped, so that it may be more easily entered. It is sometimes necessary to use filiform bougies to detect the entrance through the stricture. The long bougies ('whips") are useful in relieving retention of urine from a stricture that has contracted. The gradual dilatation produced persists sufficiently after the withdrawal of the instrument, so that the patient is able voluntarily to empty his bladder. They are very safe, as no force can be used with them, and the author believes they should be more generally employed.

The second class are cases that are not adapted to dilatation, as, for instance, those following wounds or injuries of the urethra. The difficulty may arise from the character of the scar tissue, its contractility, or there may be certain constitutional disturbances following attempts at dilatation of the gentlest kind.

These cases the author relieves by introducing a splice of new tissue into the floor of the stricture by internal urethrotomy, usually by Maisonneuve's instrument. As healing takes place under the occasional use of a bougie, a splice is formed of new tissue where the stricture was divided. For forty-eight hours or so before this is done it is well to sterilize the urine with some boric acid taken by the mouth, in small doses, or, as he has found better, boracite. The former sometimes produces indigestion, while the latter is both pleasant and reliable.

The filiform pilot is passed into the bladder, the fine metal director following it. The urethrotome is next run along the groove in the latter, and the strictures are divided from before backward. Care should be taken not to run the blade too far back and injure fibres of the sphincter, or excessive bleeding will be caused. A series of metal bulbous bougies (10–15, English gauge) should be passed successively before the patient recovers from the anæsthetic. All metal instruments for use in connection with a strictured urethra should be bulbous or olive-headed. The bladder is then emptied of any urine it may contain and washed out with a solution of perchloride of mercury (1:6000) until the lotion runs quite clear. An ounce or so is left behind in the bladder so that the first urine voluntarily passed may be sterilized. Carbolized vaseline (three grains to two ounces) is used for the instruments. The author rarely ties a catheter in the bladder unless a chronic stricture has induced an atonic bladder, when a soft catheter may be retained for forty-eight hours or so. On the fourth or fifth day a whip bougie is passed, and the patient is instructed in the use of a suitable instrument.

The third division, the impassable strictures, in the true sense of the word, are seldom encountered, for most of these, so-called, are but relatively impassable. In these cases the author uses Wheelhouse's operation with a staff, doing an external perineal urethrotomy.

THE PATHOLOGY AND TREATMENT OF RECTAL STRICTURES.—In discussing the questions whether there are such lesions as syphilitic stricture of the rectum, and whether it can be recognized by microscopical examination, Rieder (*Arch. für klin. Chir.*, Band iv., S. 730) comes to the following conclusions:

Syphilitic stricture of the rectum does exist.

It arises from the blood vessels (perhaps, also, from the lymphatics).

This origin is the cause of its relative frequency among women.

Concerning the venous involvement early in the disease, the author says it is of practical interest. If we see the veins of the skin filled with cellular infiltration, which probably is the bearer of syphilitic virus, if we see how newly formed and inflamed tissues press into the lumen of veins, then we can recognize not only that local, but that general dissemination of the disease may take place through this route, as was established years ago by Auspitz and Unna. We readily understand how the hard sore practically always occasions general infection, and how excision of the primary sore no more saves the patient than does the disinfection or excision of an infected sore preserve a patient from pyæmia, once the necessary poison has gained access to the venous circulation. The reason why syphilitic stricture of the rectum is much more common in women than in men is found in the anatomy of the parts. In women the lower group of rectal veins anastomose directly with the external pudendal, which arise from the posterior vulvar commissure. This commissure is not rarely the site of a primary sore and of secondary, but more especially of tertiary, lesions. In the male the syphilitic poison, when taken up by the veins, has to take a roundabout course through the vesical plexus before it can go from the foreskin or glans to the rectal vessels. In women the syphilitic virus taken up by the vulvar plexus is at once carried into the hæmorrhoidal veins.

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OBSTETRICS AND GYNÆCOLOGY.

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Vaginal Cancer and Vaginal Extirpation.—L. Kessler, of Dorpat (*St. Petersburg Med. Wochenschr.*, No. 34, 1898), says the prognosis of carcinoma of the female genital tract is bad. A collection which he made some years ago showed that but seven per cent. definitely recovered; the prognosis of vaginal cancer is still worse. Of eighty-four cases of primary disease from the *Frauen Klinik*, Berlin, but sixteen were found operable, and of these only one remained free of relapse at the end of two years. The reasons for the unfavorable results in vaginal cancer are found in the anatomical relations as follows: First, the vaginal wall is very thin, with a muscular structure which affords no barrier against the extension of carcinoma, consequently vaginal cancer makes rapid progress, which is promoted by the numerous lymph spaces in the surrounding paravaginal cellular tissue. As this tissue affords but little resistance, the symptoms are trifling, so that the condition remains unsuspected until hemorrhage or characteristic discharge attracts the attention of the patient to the condition, and primary cancer is discovered too late to receive radical treatment; second, an etiological factor in the relapse of this particular form of cancer exists in the fact that small foci exist at some distance about the point of original infection which are unnoticed in the operation, and in a very brief time cause a redevelopment of the scar; third, the fingers of the operator and the instruments convey cancer germs during the progress of the operation, and these, remaining in contact with the wound, are nuclei for relapse. To avoid these methods of infection Olhausen devised a procedure by the rectum from the recto-vaginal septum. Transverse incision of the septum was made. Through this one worked up by blunt dissection between the rectum and vagina to the junction of the posterior vaginal wall and cervix. Dissection was extended laterally until the new formation was completely separated. The further separation of the already loosened cancer is then completed with scissors. If the uterus is to be removed with it after the separation of the posterior and lateral vaginal walls from the wound cavity, Douglas' pouch was opened, the uterus turned down, the ligaments external to the tubes were progressively ligated and then the borders of the loosened part of the vagina cut away with scissors so the cancer was separated. In a very narrow vagina or where the space is limited by the new formation, the excision of the latter can be enlarged after separation of the vaginal wall from its under surface, by splitting the frenulum in a sagittal direction in the neighborhood of the new formation. In the last of Olhausen's three operations by this procedure a not inconsiderable hemorrhage continued for almost two hours, because the relations referable to the bladder were difficult and the ligated ligament still occasioned considerable irritation. Between this operation and its publication only a month transpired, so nothing could be said regarding the duration of the result. The first patient showed, after three years, an inoperable relapse; the second such after three months. The immediate impression of this operation is that it is not very difficult. The opening into Douglas' pouch and the vesico-uterine excavation occurs after complete separation of the vagina from the rectum and bladder and secures as well the extirpation of the uterus. The great advantage of this method, security of complete removal of the disease, if we first, from behind the entire body of the cancer, undermine and undertake its separation, within healthy tissue with scissors.—*International Medical Magazine.*

Choice of Methods in Hysterectomy.—Ernest W. Cushing (*Annals of Gynecology and Pediatry*) discusses the various methods of performing hysterectomy. The extra-peritoneal treatment of the stump has been practically abandoned unless under exceptional circumstances. In supra-pubic amputation of the uterus he unites the flaps of the cervix with continuous catgut sutures. Whenever the operation is performed for malignant disease the extirpation should be total; when the cirvex itself is diseased, eroded or secretes profusely unhealthy mucus or pus, it is better to remove it; or when this is removed with the tubes for tubercular conditions or gonorrhœal disease involving its mucous membrane so that there is presumably an infectious condition of the secretions, it is better to perform total extirpation, as it provides for drainage. Cushing considers it necessary to have much greater dexterity, experience and resource to perform vaginal hysterectomy in really the best manner in difficult cases than to operate by abdominal incision. The advantages claimed for the vaginal method are: less danger of hernia, absence of cicatrix in the abdominal wall, less time spent in the operation and less shock. On the other hand, the abdominal operation has solid advantages founded on great principles of surgery and can never be shaken; for it gives greater certainty of diagnosis, greater facility to work by sight, the possibility of recognizing and overcoming unforeseen complications, greater security against wounding intestines and ureters, and better control over hemorrhage. He condemns the method of removing the uterus without using ligatures, believing this too risky to make it a practical procedure.—*International Medical Magazine.*

Pernicious Nausea and Vomiting of Pregnancy.—In the *Zeitschrift f. Geburtshülfe und Gynäkologie*, 1898, Band 39, Heft 1, Klein contributes a paper upon this subject, based upon a study of cases observed in the clinic at Munich. He believes, with other observers, that only those cases are to be considered as pernicious vomiting in which the nourishment of mother or child is profoundly influenced and in which the disorder persists. He thinks many cases are distinctly neurotic and some are hysterical. The milder cases recover under careful feeding and proper discipline. Should in any case treatment at the patient's home not be promptly effective, the physician should at once insist upon placing the patient in a hospital. In all cases the retroflexed uterus should be replaced, although he has not seen brilliant results from the use of drugs or other local treatment. When cases are severe it may be necessary to interrupt the pregnancy. It is of especial importance that these cases should not be allowed to become severe.

Grippe as a Complication of Pregnancy and the Puerperal State.—In *L'Obstétrique*, 1898, No. 3, Bar & Boullé report their observations upon fifty women who had grippe during pregnancy or the puerperal state.

In pregnancy, grippe affected the nervous system profoundly in one case, the gastro-intestinal tract in two others, while in the majority the respiratory organs were attacked. In one of the intestinal cases, pyelitis developed, caused by infection with the colon bacillus. The majority of pregnant women in whom grippe affected the respiratory organs, recovered without especial difficulty. A small number had pneumonia, which proved a serious complication. In one patient otitis and meningitis developed, both caused by the pneumococcus. The sputum of these patients showed abundant pneumococci.

So far as the influence of grippe on the continuation of pregnancy was observed but a very few cases had metrorrhagia. Labor itself was not especially influenced by grippe. In one case in which the delivery was artificial a severe hemorrhage occurred. The placenta in these cases was found to be normal.

In the puerperal condition, grippe sometimes occasioned severe complications. Mixed infection with streptococci occurred in some cases, and in one proved fatal. In several patients pulmonary infection with the pneumococus and genital infection with the streptococcus were present in the same patient. It was observed that mixed infections were especially severe; thus, in one case of pneumonia in the puerperal state, there was phlebitis of the external jugular and cephalic veins, in another case the pulmonary lesions were accompanied by endocarditis.

Incarcerated Ovarian Dermoid Complicating Pregnancy.—Spencer describes, in the *Transactions of the Obstetrical Society of London*, 1898, vol. xl., Part III, the case of a multipara, who, on admission to the hospital, was found to be in about the middle of pregnancy. The cervix was high up and pushed forward by a tumor the size of the fist. The tumor lay in front of the rectum and could not be easily moved; under an anæsthetic it was possible to push it up out of the pelvis. It then lay in the left hypochondrium.

The patient was four and a half months pregnant, and accordingly it was thought best to allow the pregnancy to go on to full term and to remove the tumor after delivery. The patient wore an abdominal binder during the rest of the pregnancy, and had no recurrence of the pain from which she suffered while the tumor was in the pelvis.

She was confined in the hospital and had a normal delivery and recovered from labor. Fifteen days after delivery the abdomen was opened and the tumor, an ovarian dermoid, was removed. Its pedicle was twisted. The patient made a good recovery and nursed her child.

THE BACTERIA OF THE VAGINA.—Williams (*American Journal of Obstetrics*, Oct., 1898) critically reviews all recent bacteriological investigations of the vaginal secretions of pregnant women, tabulates the results obtained in his own very careful study of ninety-two cases, and establishes the following conclusions: 1. We agree with Krönig that the vaginal secretion of pregnant women does not contain the usual pyogenic cocci, having found the staphylococcus epidermidis albus only twice in ninety-two cases, but never the streptococcus pyogenes or the staphylococcus aureus or albus. 2. The discrepancy in the results of the various investigators is due to the technique by which the secretion is obtained. 3. As the vagina does not contain pyogenic cocci, autoinfection with them is impossible; and when they are found in the puerperal uterus, they have been introduced from without. 4. The gonococcus is occasionally found in the vaginal secretion, and during the puerperium may extend from the cervix into the uterus and tubes. 5. It is possible, but not yet demonstrated, in very rare instances, that the vagina may contain bacteria, which may give rise to sapremia and putrefactive endometritis by autoinfection. 6. Death from puerperal infection is always due to infection from without, and is usually due to neglect of aseptic precautions on the part of the physician and nurse. 7. Puerperal infection is to be avoided by limiting vaginal examinations as much as possible and cultivating external palpation. When vaginal examinations are to be made, the external genitalia should be carefully cleansed and disinfected, and the hands rendered as aseptic as if for a laparotomy. Vaginal douches are not necessary and are probably harmful.

OPHTHALMOLOGY, OTOLOGY AND LARYNGOLOGY.

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J. LAWTON HIERS, M. D.,
OPHTHALMOLOGIST AND LARYNGOLOGIST TO BETHESDA ORPHAN ASYLUM, SAVANNAH, GA.

Wool Tampons in the Control of Nasal Hemorrhage.—Dr. Bernard Berens advocates the use of tampons of sterilized lamb's wool, tightly rolled, impregnated with powdered boric acid, nosophen or hydrogen peroxide into the affected nostril. The expansion of the wool will arrest the hemorrhage. The instillation of several pipettefuls of benzoinols easily removes the plug.

A Case of Polyp in Thrapnell's Region of Remarkably Rapid Evolution.—Dr. Ripault, in the *Revue Hebdomadaire de Lav., d' Otol., et de Rhei,* September 10, 1898, reports the following: A cabinet maker, 35 years of age, syphilitic, presented himself with a purulent discharge from the right ear. Perforation of the tympanic membrane was found above the short process of the malleus. He was seen a month later, when, in addition to the discharge, he complained of pain, deafness and the sensation of having a hard body within the external auditory canal. The snare removed an enormous polyp, which had *developed in the space of a month* under the influence of the specific taint. Mercury and cleansing lead to the cure of the case.

The Cure of Purulent Ophthalmia by the Proteinate of Silver (Protargol).—Darier, A., Paris (*La Clinique Ophtalmologique,* of March 25th, 1895). Further investigations have confirmed Darier in the favorable opinion he had already formed of this salt, from which he is led to conclude that it is the most efficient of all the silver-salts in cases of purulent conjunctivities.

For general employment the 20% strength solution should be employed, but he says that it may be used without danger in solutions of strength as high as 50%. He recommends the employment of the 10 to 15% strength solution as a prophylactic measure in cases of infants who are born of mothers suffering from vaginal inflammation. With his article he publishes a note from Neisser, in which the bactericidal action of protargol as compared with the other salts of silver, particularly in their action upon the gonococcus, is spoken of favorably. He has found that the action of protargol is practically painless.

Oedema of the Eyelids.—Dechamp announced, at the recent French Congress of Ophthalmology, that he had been very successful in curing essential oedema of the eyelids with Launelongue's injection of 1-20 zinc chlorid once a week, for six to eight weeks. (*Journal of the American Medical Association*, Nov. 5, 1898.)

Sympathetic Ophthalmia.—Dr. George Ferdinands, in the *British Medical Journal*, reports two cases of sympathetic ophthalmia, remarkable for the length of time that elapsed between the emcleation of the fellow eye for injury and the development of the sympathetic trouble—in one case eighteen years, and in the other about twenty-one years. The interval in the latter case is without precedent. (The *Ophthalmic Record* for October, 1898. Prof. Thompson, of Jefferson Medical College, at one of his clinics several years ago, showed a case of sympathetic ophthalmia occurring after an interval of *nineteen* years.—Ed's.)

Ocular Affections of the Utero-Ovarian Region.—In ocular affections connected with utero-ovarian troubles—which are more frequent than usually supposed—Prof. Mooren relieves the tenacious hyperesthesia of the retina with the following:

℞ Potash bromide, 4 grains;
Lupulin, 6.5 grains;
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Should the ovary be the cause of the ocular trouble, he gives:

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Pulverized glycerine, 2.5 grains;
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If the reflex ocular irritation depends upon some simple functional disturbance in the uterus or ovaries, he administers elixir paracelsus in the dose of fʒss T. I. D. for several weeks in the case of robust patients, otherwise reducing this amount to fʒ½, or merely several drops during the few days preceding the menses. A copious metrorhagia may induce a serious effusion in the retina, or urona-retinitis; which are relieved by cold compresses or ice to the back of the neck, with leeches to the mastoid, and saline purgatives if necessary. Local treatment to remove the cause in all cases.—*Semaine Med.*, Sept. 28. (*Journal of the American Medical Association.*)

◆

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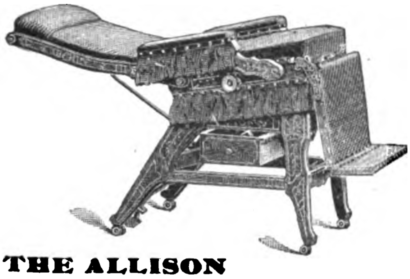

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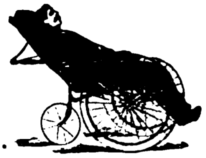

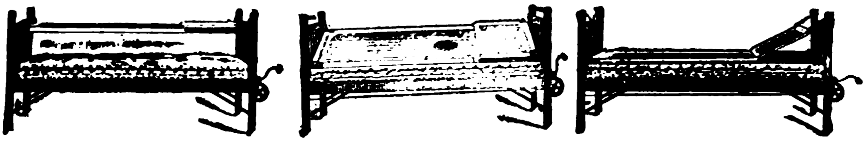

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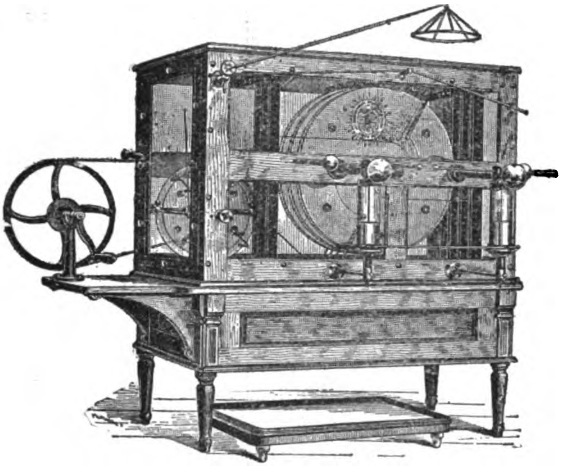

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To the notes below and on the following pages, also in future issues, we respectfully direct your attention.

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Dr. Walter M. Fleming (*Journal of Nervous and Mental Disease*) says that in acute attacks of laryngeal or winter cough, tickling and irritability of larynx, Antikamnia and Codeine Tablets are exceedingly trustworthy. If the irritation or spasm prevails at night the patient should take a five-grain tablet, containing $4\frac{3}{4}$ gr. Antikamnia and $\frac{1}{4}$ gr. Sulphate Codeine, an hour before retiring, and repeat it hourly until the irritation is allayed. Allow the tablet to dissolve slowly in the mouth, swallowing the saliva. After taking the second or third tablet the cough is usually under control, at least for that paroxysm and for the night. Should the irritation prevail in the morning or at midday, the same course of administration should be observed until subdued. In neuralgia, in short, for the multitude of nervous ailments, he doubts if there is another remedial agent so reliable, serviceable and satisfactory, and this, without establishing an exaction, requirement or habit in the system, as morphine does. —*The New York Medical Journal.*

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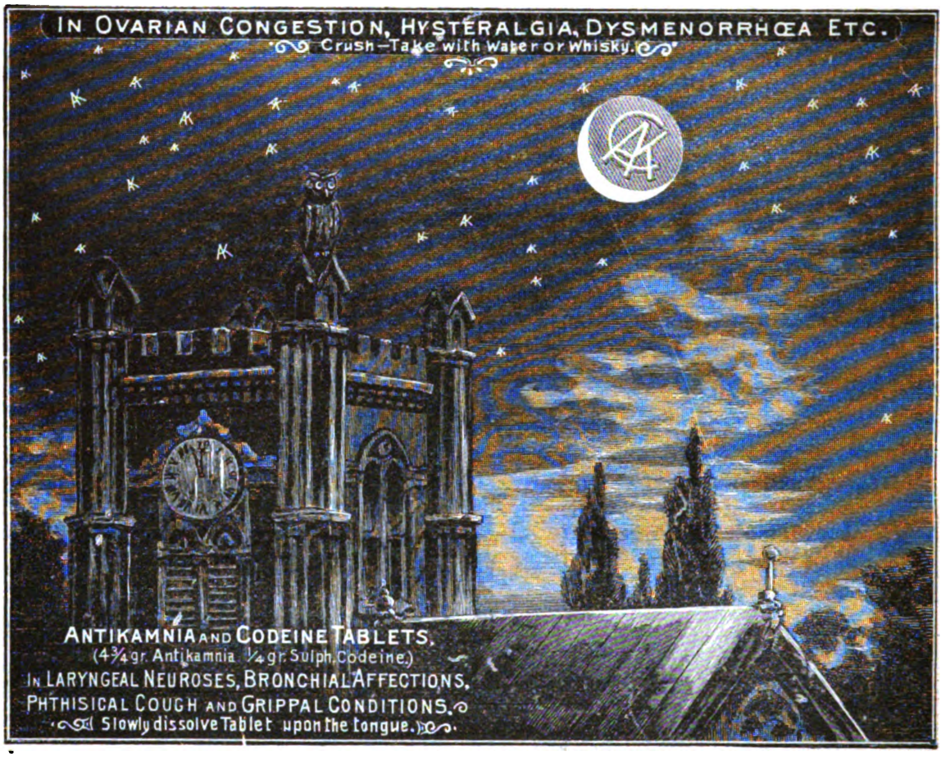
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CATALOGUE CASE NO. 50. GENERAL TUBERCULOSIS, AND INTESTINAL OBSTRUCTION.

Angelo B——, Portchester, N. Y.; Italian; age 40; admitted June 4, 1898. Physical examination revealed a general tuberculous condition, centred most severely in the right lung. Stethoscopic examination indicated a cavity in the upper lobe, of about the size of a dime, and also an apex deposit. System much run down, and anæmic. Was put on capsules containing 1 minim beechwood kreasote, 5 of oil of cinnamon, 5 of oil eucalyptus, and 5 grs. ichthyol, given every three hours; also a teaspoonful of glycozone every three hours. Diet, a tablespoonful of bovinine in wild cherry brandy every three hours, and light orninary food was allowed, of which, however, he could not take much. Patient suffered extremely from constipation, having gone, as I learned, for a week at times without an operation. To overcome this he was given a teaspoonful fluid extract cascara night and morning, followed by a glass of water. Began to do very nicely, and so up to the night of the 10th, when the nurse announced to me that he was in great pain, and examination revealed fæcal impaction. All methods employed without operation proved unavailable. On the 12th, laparotomy was performed, and the impaction was located in the cæcum. It was broken up by manipulation with the fingers, and gently assisted down the gut. After thorough cleansing of the abdominal cavity, the wound was closed with eight silk sutures and dressed with iodoform-bovinine. The next evening he complained again of great pain. Digital examination revealed a hard mass filling the rectum and extending up to the sigmoid flexure. Enema of warm soap suds and water was

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given, but failed to bring away but a small portion of the mass. The reaction of hydrogen peroxide on bovinine was then employed in the rectum, with a most gratifying effect from its effervescence, in resolution of the mass, which, within four or five minutes after the injection, passed out entire, without any pain, and patient expressed great relief.

June 20th, bovinine was increased to a wineglassful every three hours, while the capsules were continued, but the cascara was ordered given only when necessary. Patient at this time showed considerable improvement, began to feel stronger, enjoyed his food and slept well, and showed a much better color. Bovinine was then given in the same quantity every two instead of three hours, in grape juice, old port wine, and milk, alternately.

Stethoscopic examination on July 12th showed the lung cavity healing; and on the 24th, the apex deposit entirely encysted, and the cavity nearly healed. August 3d, the cavity was found to be entirely healed; patient had gained thirteen and a half pounds in weight, and said he felt perfectly well. Case had been profoundly anæmic, the microscope revealing only 1,100,000 red corpuscles per c. c., and hæmaglobin far below normal. Present showing was of red corpuscles 2,300,000, and hæmaglobin little short of normal. Microscopic examination of sputum found no trace of tubercle bacilli.

This case will continue to be closely observed, as the tubercular condition was general, and would be very apt to develop further.

The rapidity with which the cavity, though small, was healed, makes the case unique and wonderful in my mind, and was evidently due altogether to the reparatory action of supplied blood.

A CASE OF PSORIASIS.

M. A. WHEELER, M. D., TROY, N. Y.

Psoriasis was to me a troublesome affection in my early years of practice, the ordinary text-book giving little assistance in these cases.

I have treated a number of cases with thyroid extract, arsenic and tonics, and applied oxide of zinc ointment mercurials and all the usual remedies with but little benefit to the patient or satisfaction to myself. The treatment now giving satisfactory results to me and my patients will be best seen in the brief report of the following case:

Daniel C., aged 26 years, laborer, single, came under my observation at Rensselaer County Hospital, Nov. 8, 1897. Family and personal history negative. Patient claimed to have had when 14 years old an eruption on the hands and head, which varied in extent and severity, though never giving him much discomfort, except a slight itchiness and scaling at times. He continued about the same for a period of three years, when the eruption extended to the chest and abdomen, and increased in severity to such an extent that a physician was consulted, and the case diagnosed as psoriasis. At that time skin was scaly, and the itch was almost unendurable. Patient was treated from four to six months, when the scales disappeared, red blotches remaining, and the itching at times, to use expression of patient, was "unbearable." He remained in this condition, with intervals of partial relief, the longest of which was two months. On Nov. 8, 1897, he came to the hospital a nervous wreck—the whole body in a deplorable condition, the entire integument thickened, indurated and covered with cracks and scales, nearly two quarts of scales falling from his body in twenty-four hours. We gave thyroid extract, arsenic, tonics and applied soothing applications with but slight relief and no appreciable improvement. Finally I put patient on phos. sodæ, gr. v before meals and Fowler's sol., gtts v, after meals. As my attention had been directed to Pixine for chronic skin diseases, I directed the nurse to apply it to one arm of the patient three times a day. At my next visit, two days later, the dry, cracked condition of the part was disappearing. Patient said the itching there had ceased, and wished to have the ointment applied over whole body.

For experiment I continued it only on the arm, and in ten days there was so great an improvement that I ordered the ointment applied to the "whole body." The irritation rapidly subsided, the dryness and cracks disappeared, in three weeks scales ceased to form, and in two months from the first application of Pixine (March, 1898) the skin was normal—the first time, the patient claims, in twelve years. At this time (Oct. 10, 1898) there has been no return of any of the symptoms. Have treated one other case, nearly as severe, on the legs, in a man of 70 years, who recovered in six weeks.

This is my first experience with Pixine in skin diseases, and I must say the results were most satisfactory.—From *New York Lancet*, Nov., 1889.

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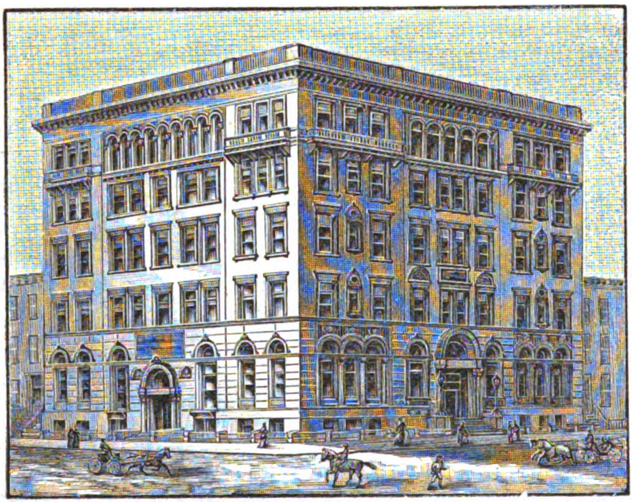

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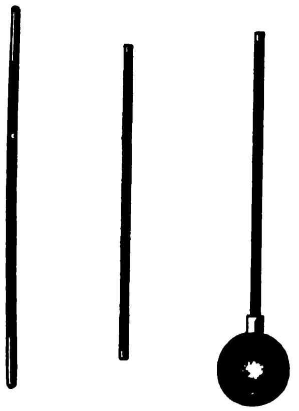

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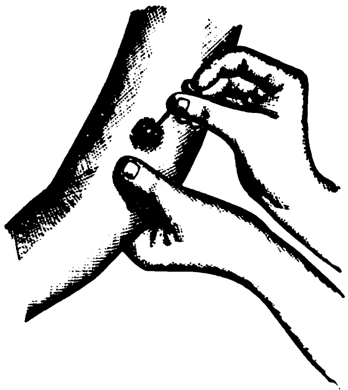

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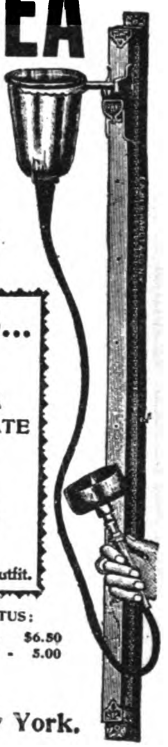

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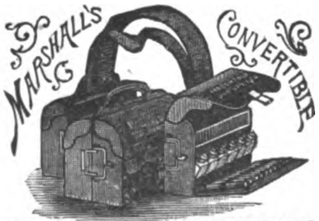

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